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# Evaluation of the Relation between Self-care Management and Treatment Compatibility Among Patients with Diabetes Mellitus

*Diabetes Mellitus Hastalarında Öz Bakım Yönetimi ile Tedavi Uyumu Arasındaki İlişkinin Değerlendirilmesi*

Gizem ŞENYÜREK ADA[1], Ali İhsan ÇABUK[2], Muhteşem Erol YAYLA[2]

[1]Clinic of Family Medicine, Çukurova State Hospital, Adana, Türkiye

[2]Clinic of Family Medicine, University of Health Sciences Turkey, Adana City Training and Research Hospital, Adana, Türkiye

**ABSTRACT**

**Objective:** To prevent complications of diabetes mellitus (DM) and to maintain health in the best way possible, the knowledge level of patients regarding diabetes should be increased, and every step of treatment and self-care management should be adopted by the patient. This study aimed to determine the relationship between self-care management and treatment compliance in patients with DM who applied to the University of Health Sciences Turkey, Adana City Training and Research Hospital Endocrinology and Metabolism Polyclinic.

**Material and Methods:** In this cross-sectional study, 320 patients aged between 18 and 85 years who applied to University of Health Sciences Turkey, Adana City Training and Research Hospital Endocrinology and Metabolism Polyclinic between 02.01.2023 and 02.04.2023, and who were diagnosed with diabetes for at least 1 month were included in the study. The socio-demographic data form consisting of 23 questions, the chronic disease self-care management scale (SCMP-G) consisting of 35 questions, and the Morisky medication adherence scale consisting of 8 questions were applied to the patients. The data were analyzed using the SPSS 24.0 package.

**Results:** 61.9% of the patients with DM who participated in the study were female, and the mean age was 55.08 ± 12.39 years. The mean body mass index of the participants was 30.31 ± 6.42 and the hemoglobin A1c (HbA1c) values were found to be 8.65 ± 2.68. A chronic disease accompanying diabetes was found in 71% of the participants, and the most common chronic disease was hypertension. In the treatment of diabetes, 37.5% of the participants used only oral antidiabetic (OAD), 27.8% OAD + insulin, 14.4% only insulin. It was found that 61.6% of the participants went to check-ups regularly, 15.9% performed physical activity, and 63.8% made changes in their eating habits. A weak negative correlation was found between the self protection subdimension and the number of drugs, duration of diabetes diagnosis, and HbA1c values. Participants who received diabetes education had high SCMP-G scores, which was a significant difference (p=0.008).

**Conclusion:** Disease self-care management will increase as self-protection and social protection for individuals with diabetes increase. Treatment compliance of individuals with high self-care management will also increase. Therefore, diabetes education should be given importance to individuals with diabetes.

**Keywords:** Diabetes mellitus, self-care management, treatment compliance

**ÖZ**

**Amaç:** Diabetes mellitus'un (DM) komplikasyonlarından korunmak ve sağlığı en iyi şekilde idame ettirebilmek için hastaların diyabet hakkındaki bilgi düzeyleri arttırılmalı, tedavinin her basamağı ve öz bakım yönetimleri hastaya benimsetilmelidir. Bu çalışmamızda, Sağlık Bilimleri Üniversitesi, Adana Şehir Eğitim ve Araştırma Hastanesi Endokrinoloji ve Metabolizma Polikliniği'ne başvuran DM hastalarının öz bakım yönetimi ile tedavi uyumu arasındaki ilişkiyi belirlemek amaçlanmıştır.

**Gereç ve Yöntemler:** Bu araştırma kesitsel olarak 02.01.2023-02.04.2023 tarihleri arasında Sağlık Bilimleri Üniversitesi, Adana Şehir Eğitim ve Araştırma Hastanesi Endokrinoloji ve Metabolizma Polikliniği'ne başvuran 18-85 yaş arası, en az bir aylık diyabet tanısı olan 320 hasta çalışmaya dahil edilmiştir. Hastalara, 23 soruluk sosyo-demografik veri formu, 35 sorudan oluşan Kronik Hastalık Öz Bakım Yönetimi Ölçeği (KHÖBY) ve 8 sorudan oluşan Morisky tedavi uyum ölçeği-8 uygulanmıştır. Veriler, SPSS 24.0 paket programı ile analiz edilmiştir.

**ÖZ**

**Bulgular:** Çalışmaya katılan DM tanılı hastaların %61,9'u kadın ve yaş ortalaması 55,08 ± 12,39 yıldı. Katılımcıların beden kitle indeksi ortalaması 30,31 ± 6,42 ve HbA1c değerleri 8,65 ± 2,68 olarak bulundu. Katılımcıların %71'inde diyabete eşlik eden kronik hastalık saptandı ve en sık eşlik eden kronik hastalık hipertansiyondu. Diyabet tedavisinde katılımcıların %37,5'i sadece oral antidiyabetik (OAD), %27,8'i OAD + insülin, %14,4'ü sadece insülin kullanıyordu. Katılımcıların %61,6'sının düzenli olarak kontrole gittiği, %15,9'unun fiziksel aktivite yaptığı ve %63,8'inin beslenme alışkanlıklarında değişiklik yaptığı bulundu. Öz koruma alt boyutu ile ilaç sayısı, diyabet tanı süresi, HbA1c değerleri arasında negatif yönlü zayıf bir ilişki bulundu. Diyabet eğitimi alan katılımcıların KHÖBY ölçek puanları yüksekti ve anlamlı bir fark vardı (p=0,008).

**Sonuç:** Diyabetli bireylerin öz ve sosyal korumaları yükseldikçe hastalık öz bakım yönetimleri de yükselecektir. Öz bakım yönetimi yüksek olan bireyin tedavi uyumu da artacaktır. Bu nedenle diyabetik bireylere diyabet eğitimlerine önem verilmelidir.

**Anahtar Kelimeler:** Diyabetes mellitus, öz bakım yönetimi, tedavi uyumu

## INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder that is often characterized by hyperglycemia, which is caused by a multisystemic attitude in which the body does not receive sufficient carbohydrates, fats, and proteins, and requires constant medical attention (1,2). Diabetes, one of the most important health problems of the 21st century, is increasing worldwide and, in parallel, the number of patients and incidence of diabetes are rapidly increasing in our country. Diabetes can cause disorders in all systems unless diagnosed early and treated properly. Diabetes may be prevented or delayed by identifying high-risk individuals and undergoing lifestyle changes (3). The treatment of DM is a life-long complex process (4). In addition to medical treatment, self-care management is a key component of diabetes treatment (5). Diabetes self-care management should be effective for individuals with diabetes. Diabetes management consists of self-care activities such as glycemic control, appropriate treatment, smoking and alcohol use, patient adjustment to treatment, checking at regular intervals, foot care, physical activity, and nutrition (6). Patient self-care management has been shown to be beneficial, reduce mortality and diabetes complications, reduce healthcare costs, and improve quality of life (7).

The aim of this study was to determine the relationship between self-care management and treatment adjustment in patients with DM who applied to the University of Health Sciences Turkey, Adana City Training and Research Hospital, Endocrinology and Metabolism Polyclinic.

## MATERIALS and METHODS

This cross-sectional study was conducted with individuals diagnosed with diabetes aged 18-85 years who applied to the University of Health Sciences Turkey, Adana City Training and Research Hospital, Polyclinic for Endocrinology and Metabolism between 02.01.2023 and 02.04.2023. The sample size was calculated at a minimum of 319. At least 400 diabetic patients have been investigated. Patients diagnosed with diabetes for at least a month were included in the study. Eighty newly diagnosed patients with diabetes were excluded. Informed consent was obtained from all participants.

The data were collected through 23 question-dependent variables, including independent variables such as age, gender, educational level, duration of diabetes, treatment method, other chronic diseases (if any, the number of medications used, hemoglobin A1c (HbA1c) value, dietary habits, physical activity, the chronic disease self-care management scale (SCMP-G), and the Morisky medication adherence scale-8. The data were collected using face-to-face survey forms for patients who agreed to participate in the study after being informed by the researcher. After Jones and Preuett (8) defined the concept of self-care management process (SCMP), SCMP conservation was developed with the validity of the concept being tested and the characteristics of the protection concept being explained and added (9). SCMP-G, comprising a total of 35 items, has two sub-dimensions, namely, self-protection and social protection. The rating of the scale has been developed from a Likert-like form of 5 (I totally agree) and 1 (I never agree). A minimum of 35 points and a maximum of 175 points are awarded on the scale. The low SCMP-G score indicates that self-care management is poor, whereas the high score indicates that self-care management is good. Turkish validity and credibility studies were conducted in 2018 by Hançerlioğlu and Şenuzun Aykar (5). The Morisky treatment adjustment scale developed a four-question survey in 1986 to assess Morisky et al. compliance with antihypertensive drug therapy. In 2009, Morisky finalized eight questions to improve the validity and reliability of the survey. The first seven questions in the survey are closed-ended questions with answers in the form of yes or no. Yes answers questions 1 to 6 and 7 and yes answers question 5 are awarded 1 point. The last question was a five-choice question and "never/rarely" is rated 1 and all other answers are rated 0 points. A total score of <6 indicates low treatment compliance, 6-7 points moderate compliance, and 8 points indicates high therapy compliance (10). The study was approved by the University of Health Sciences Turkey, Adana City Training and Research Hospital Ethics Board (decision number: 2338, date: 29.12.2022)

### Statistical Analysis

The statistical analysis was performed using the SPSS 24.0 package. Categorical measurements were expressed as numbers and percentages, and numeric variables were given as the mean +/- standard deviation with minimum (min) and maximum (max) values. In determining whether

the parameters included in the study had a normal distribution, the scale scores of the scales were considered. The independent Student's t-test was used for binary group analysis of normal distribution parameters and the one-way ANOVA test for three or more groups. Spearman's correlation analysis was used to evaluate the relationships among the numerical data. Linear regression analysis was performed to determine the relationship between scales and subdimensions. The difference was considered statistically significant at a p-value was <0.05.

## RESULTS

Of the 320 patients diagnosed with diabetes included in the study, 61.9% (n=198) were women and 38.1% (n=122) were men. The mean age of the participants was 55.08 ± 12.39 years. (min: 19, max: 79) (Table 1). The mean body mass index (BMI) of the participants was 30.31 ± 6.42 kg/m$^2$ (min: 17.9, max: 55.77). The average HbA1c was 8.65 ± 2.68 gr/dL (min: 4.6, max: 17.9). The response to the question "Do you have any physical or mental illness that requires medication?" was yes in 71% (n=227) and no in 29% (n=93). For chronic diseases, 49.1% (n=157) had hypertension, 33.8% (n=108) had hyperlipidemia, 20.3% had coronary artery disease, 7.8% had thyroid disorders, 7.5% had asthma/chronic obstructive pulmonary disease, and 19.1% had other diseases (anemia, anxiety, depression, arrhythmia, gastritis, chronic kidney failure, and chronic heart failure). The question "How many months/years ago did you get a diagnosis of diabetes?" was answered by 12.2% (n=39) from one month to one year, 21.6% (n=69) from 1 to 5 years, 23.4%

| Table 1. Socio-demographic characteristics of participants | | | |
|---|---|---|---|
| | | (n) | (%) |
| **Age** | 35 and younger | 22 | 6.9 |
| | 36-45 | 45 | 14.1 |
| | 46-55 | 81 | 25.3 |
| | 56-64 | 99 | 30.9 |
| | 65 and older | 73 | 22.8 |
| **Gender** | Female | 198 | 61.9 |
| | Male | 122 | 38.1 |
| **Educational status** | Illeterate | 65 | 20.0 |
| | Primary education | 135 | 42.2 |
| | Secondary education | 46 | 14.4 |
| | High school | 43 | 13.4 |
| | University and above | 32 | 10.0 |
| **Marital status** | Married | 244 | 76.2 |
| | Single or widowed/divorced | 76 | 23.8 |
| **Smoking** | Yes | 74 | 23.1 |
| | No, I have never smoked before. | 186 | 58.1 |
| | No, I used to drink, I quit | 60 | 18.8 |
| **Alcohol** | Yes, I use alcohol | 28 | 8.8 |
| | No, I do not use | 292 | 91.2 |
| **Living together status** | I live alone | 36 | 11.2 |
| | With my spouse/children | 272 | 85.0 |
| | With mom and/or dad | 12 | 3.8 |
| **Requires the use of medication physical or mental illness** | Yes | 227 | 71 |
| | No | 93 | 29 |
| **Chronic diseases** | Hypertension | 157 | 49.1 |
| | Hyperlipidemia | 108 | 33.8 |
| | Coronary artery disease | 65 | 20.3 |
| | Thyroid disorders | 25 | 7.8 |
| | Asthma/COPD | 24 | 7.5 |
| | Others | 61 | 19.1 |
| | | **Avr ± SD** | **Min-max** |
| **Number of medicines used daily** | | 4.42 ± 2.58 | 1-15 |
| n: Number, COPD: Chronic obstructive pulmonary disease, Avr ± SD: Average + standard deviation, Min-max: Minimum - maximum | | | |

(n=25) from 5-10 years, 15.9% (n=51) from 10 to 10 years, 14.4% (n=46) from 15 to 20 years, and 12.5% (n=40) from 20 years and above. When the treatment patterns of the participants were studied, no patient received dietary therapy combined with exercise, diet alone, or exercise. Treatment methods are presented in Table 2.

The distribution of scores of the SCMP-G and Morisky treatment adjustment scale are presented in Table 3.

When the Morisky treatment adaptation scale was used to evaluate participants' treatment compliance, 47.5% (n=152) showed low therapy compliance (<6 points), 27.5% (n=88) showed moderate therapy adaptation (6 to 7 points), and 25%

(n=80 points) showed high therapeutic compliance (8 points). A comparison of the participants' self-protection and social protection subdimension revealed that the overall scores of the SCMP-G and the Morisky treatment adjustment scale scores did not show a significant difference between age, sex, smoking status, and alcohol use (p>0.05).

The average self-protection and SCMP-G scores of those who were regularly checked, had regular physical activity, and who had changed their dietary habits were significantly higher (p≤0.001) compared to those who did not go to regular checkups, did not exercise regularly, and did not change their eating habits.

| Table 2. Data on diabetes of the participants | | | | | n | % |
|---|---|---|---|---|---|---|
| Duration of diabetes diagnosis | 1 month- 1 year | | | | 39 | 12.2 |
| | 1-5 years | | | | 69 | 21.6 |
| | 5-10 years | | | | 75 | 23.4 |
| | 10-15 years | | | | 51 | 15.9 |
| | 15-20 years | | | | 46 | 14.4 |
| | 20 years and over | | | | 40 | 12.5 |
| Regular check-up status | Yes | | | | 197 | 61.6 |
| | No | | | | 123 | 38.4 |
| Regular physical activity status | Yes | | | | 51 | 15.9 |
| | No | | | | 169 | 84.1 |
| Nutrition habits amendment | Yes | | | | 204 | 63.8 |
| | No | | | | 116 | 36.2 |
| Diet program | Yes | | | | 38 | 11.9 |
| | No | | | | 282 | 88.1 |
| Treatment modes | Only OAD* | | | | 120 | 37.5 |
| | Only Insulin | | | | 46 | 14.4 |
| | OAD* | Insulin | | | 89 | 27.8 |
| | Diet | OAD* | | | 14 | 4.4 |
| | Diet | Insulin | | | 9 | 2.8 |
| | Exercise | OAD* | | | 7 | 2.2 |
| | Exercise | Insülin | | | 1 | 0.3 |
| | Exercise | Diet | OAD* | | 14 | 4.4 |
| | Exercise | OAD* | Insulin | | 6 | 1.8 |
| | Exercise | Diet | Insulin | | 4 | 1.3 |
| | Diet | OAD | Insulin | | 4 | 1.3 |
| | Exercise | Diet | OAD* | Insulin | 6 | 1.8 |

n: Number, *OAD: Oral antidiabetic drugs, Min-max: Minimum - maximum

| Table 3. Scores taken by participants from scales | Number of items | Mean ± standart deviation | Min-max |
|---|---|---|---|
| Chronic disease self-care management scale | 35 | 115.51 ± 14.26 | 69-146 |
| Self-protection subsize | 20 | 46.37 ± 5.77 | 24-60 |
| Social protection subsize | 15 | 35.88 ± 8.41 | 17-57 |
| Morisky treatment adjustment scale | 8 | 5.53 ± 2.11 | 0-8 |

Min-max: Minimum - maximum

When a comparison was made according to the total scores of the Morisky treatment compliance scale, no significant difference was found between those who exercised and those who did not exercise, between those who dieted and those who did not diet, between those who used oral antidiabetics (OAD) and those who did not use them, and between those who used insulin and those who did not use it ($p>0.05$).

The average SCMP-G score of participants who received diabetes education was significantly higher than that of participants who did not receive diabetes education ($p=0.008$).

There was a weak negative correlation between self-protection and the number of medications, duration of diabetes diagnosis, and Hb A1c values. ($r=0.127$; $r=-226$; $r=-150$). We could not find a relationship between other variables (Table 4).

There was a positive and medium strong relationship between the SCMP-G and the self-protection subdimension ($r=0.552$; $p<0.001$). There was a strong positive link between SCMP-G and the social protection subdimension ($r=0.733$; $p<0.001$).

There is a positive weak relationship between the Morisky treatment adjustment scale and the self-protection and SCMP-G ($r=0.162$; $p=0.004$) (Table 5).

When the effect of the SCMP-G variable on the Morisky treatment adjustment scale was studied, it was found that SCMP-G had a positive effect ($F=8.524$, $p=0.004$). SCMP-G improves Morisky treatment alignment.

When the impact of the self-protection and social protection variables on the Morisky treatment adjustment scale was examined, it was found that self-protection was positive ($F=7.494$, $p<0.001$), that social protection was ineffective ($p>0.05$). Self-protection sub-size enhances Morisky's therapeutic fit. The under-sized social protection did not affected Morisky's treatment compatibility.

## DISCUSSION

When the Turkey Diabetes, Hypertension, Obesity and Endocrinologic Diseases Prevalence Study-II (TURDEP II) study was examined, the prevalence of diabetes was higher in women than in men (11). In a study of patients diagnosed with diabetes in 28 countries, the mean age was 54.0 ± 12.0 years (12). In our study, 30.9% of patients were aged 56-64 when grouped by age. According to the International Diabetes Federation 2021 data, the peak of diabetes occurred between the ages of 55 and 59 (13). The gender and age in our study are parallel to those of previous studies, and the age averages appear to be consistent with the age ranges in which diabetes was increasing (14-17).

**Tablo 4. Body mass index correlation analysis between number of drugs, diabetes diagnosis duration and HbA1c values scales**

| | | Self-protection | Social protection | Chronic disease self-care management scale | Morisky treatment adjustment scale |
|---|---|---|---|---|---|
| Body mass index | r | 0.023 | -0.097 | -0.074 | -0.027 |
| | p | 0.686 | 0.084 | 0.185 | 0.632 |
| Number of drugs | r | -0.127* | 0.096 | 0.012 | -0.013 |
| | p | 0.023 | 0.088 | 0.827 | 0.822 |
| Diabetes mellitus diagnosis duration | r | -0.226** | 0.102 | -0.052 | 0.031 |
| | p | 0.000 | 0.069 | 0.355 | 0.581 |
| HbA1c | r | -0.150** | 0.004 | -0.065 | -0.095 |
| | p | 0.007 | 0.945 | 0.248 | 0.090 |
| *Spearman correlation analysis was used, r: Spearman's rho value, HbA1c: Hemoglobin A1c | | | | | |

**Table 5. Correlation analysis between scales**

| | | Self protection | Social protection | Chronic disease self-care management scale | Morisky treatment compliance scale |
|---|---|---|---|---|---|
| Self protection | r | 1 | | | |
| | p | | | | |
| Social protection | r | -0.064 | 1 | | |
| | p | 0.257 | | | |
| Chronic disease self-care management scale | r | 0.552** | 0.733** | 1 | |
| | p | 0.000 | 0.000 | | |
| Morisky treatment compliance scale | r | 0.211** | -0.036 | 0.162** | 1 |
| | p | 0.000 | 0.518 | 0.004 | |
| **Spearmans correlation analysis, r: Spearman's rho coefficient | | | | | |

The most common chronic disease associated with diabetes is hypertension, and the same conclusion was reached in the studies of TURDEP II (11), Khawaldeh et al. (18), and Naous et al. (19). And our work supports that. In a study conducted with patients with DM in Nigeria, similar to the present study, no statistically significant difference was found between the duration of diagnosis and treatment adherence. (20). Sayiner et al. (21) found that as the duration of diabetes increased, treatment compliance was poor and explained that long-term therapies caused fatigue in patients. In a retrospective cohort study of patients with diabetes in the United States, the response rate for the first 3 months of treatment was 45%, and the response to the 12th month of treatment was 35% (22). According to these data, chronic diseases are not adapted to treatment as time passes. The patient's idea of taking medication throughout his life might distract him from receiving treatment. A previous study found a meaningful relationship between BMI and the subdimension of self-protection on the scale, and as BMI increased, self-protection decreased (23). Wallston et al. (24) found an inverse ratio between BMI and self-care management in patients with diabetes. HbA1c is an important indicator of diabetes self-management in individuals diagnosed with diabetes. The study by Mumcu and İnkaya (25) showed a positive improvement in HbA1c values as patients improved in self-care and quality of life. In a meta-analysis study by Wu et al. (26), mobile health practices were shown to strengthen self-management in individuals with diabetes and significantly reduce HbA1c values in individuals with increased self-management. In our study, patients' HbA1c values decreased as their self-protection increased. The decrease in HbA1c was seen to contribute to strengthening self-management. A study by Khalooei and Benrazavy (27) found that those who participated in diabetes education were better at self-care and self-management than those who did not receive education. A randomized, controlled study in China showed improvement in the self-management, clinical, lifestyle, and psychosocial conditions of patients undergoing diabetes education programs (28). Our findings suggest that people with diabetes education have better disease self-care management.

A study by Alanyali and Arslan (29) found that individuals with physical activity have good self-management. The study, which examined the levels of self-sufficiency among individuals with diabetes, found that individuals who performed regular physical activity had higher levels of self-sufficiency (30). Regular nutrition, accompanied by adequate and regular physical activity, were one of the important determinants of self-management. A study that evaluated the dietary habits and diabetes management of 100 patients with diabetes between the ages of 18 and 64 found that individuals who changed their eating habits had better diabetes management (31). This is parallel to our findings.

In France, a study on therapeutic adjustments in patients with type 2 DM showed no significant difference in treatment adjustments between OAD and insulin (32). A study conducted by Kara and Kara (33) examined the treatment adjustment and quality of life of diabetic patients compared with OAD + insulin patients and found that OAD patients adjusted better to treatment. In a study of hypertensive patients, Melnikov (34) found that taking blood pressure measurements at home and self-monitoring increased disease control and treatment compliance in patients. The previous study, which evaluated epilepsy and self-management, found that individuals with good self-care management have high convictions regarding both drug compliance and treatment (35).

## Study Limitation

The study was cross-sectional in nature and did not report cause and effect. The fact that the study was conducted in a single center was one of the limitations of the study.

## CONCLUSION

In conclusion, the higher the level of self-protection and self-care management, the greater the therapeutic compliance, and individuals with higher levels of self-protection and social protection would manage the disease better. The longer the diagnosis duration, the fewer the patients' protection. Patients with regular physical activity had higher levels of self-protection and self-care management.

Individuals who changed their dietary habits showed good self-protection and self-care management and high treatment adherence. Patients should be monitored during diabetes treatment and should be included in the treatment phase. Patients should be encouraged to acquire the necessary skills for self-care management of chronic diseases, and their compliance with and satisfaction with treatment should be evaluated.

### Ethics

**Ethics Committee Approval:** The study was approved by the University of Health Sciences Turkey, Adana City Training and Research Hospital Ethics Board (decision number: 2338, date: 29.12.2022)

**Informed Consent:** Informed consent was obtained from all participants.

**Author Contributions**

Surgical and Medical Practices: A.İ.Ç., M.E.Y., G.Ş.A., Concept: A.İ.Ç., G.Ş.A., Design: M.E.Y., G.Ş.A., Data Collection or Processing: G.Ş.A., A.İ.Ç., Analysis or Interpretation: A.İ.Ç., M.E.Y., G.Ş.A., Literature Search: G.Ş.A., A.İ.Ç., Writing: G.Ş.A., A.İ.Ç., M.E.Y.

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9

# Evaluation of One Hundred and Fifteen  Cases Followed up with the Diagnosis of Leptospirosis

*Leptospioz Tanısı ile İzlenen 115 Olgunun Değerlendirilmesi*

 Abdullah GÖLBOL[1],  Nuray HEYDAR[2]

[1]*Clinic of Infectious Diseases and Clinical Microbiology, University of Health Sciences Turkey, Adana City Training and Research Hospital, Adana, Türkiye*
[2]*Clinic of Infectious Diseases and Clinical Microbiology, Bayrampaşa State Hospital, İstanbul, Türkiye*

**ABSTRACT**

**Objective:** This study was conducted to investigate the clinical, laboratory, and epidemiological characteristics of 115 patients who were followed up with the diagnosis of leptospirosis.

**Material and Methods:** The study was conducted the study was conducted retrospectively and descriptively. In total, 115 cases of leptospirosis were analyzed retrospectively. The microagglutination test was used for disease serodiagnosis. The data were analyzed using the SPSS-22 package.

**Results:** The mean age of the patients was 29.4 years (minimum: 10, maximum: 65), and 96 (83.5%) can be deleted were men. 43.6% (n=50) of the patients were hospitalized. Five hospitalized patients were followed up in the intensive care unit. The disease was not fatal. All patients presented with fever. Hepatomegaly was the most common sign 31.3% (n=36). Thrombocytopenia occurs in 73% of patients, and it is the most important laboratory finding. The most important finding of our study was that no deaths were observed in these cases.

**Conclusion:** The coincidence of patient presentation to the epidemic period, consideration of leptospirosis in the differential diagnosis, and early commencement of antibiotic therapy were thought to contribute to the lack of deaths. The younger age of patients in our study may be another reason for the lack of mortality. Leptospirosis remains a common zoonosis in tropical regions, particularly among agricultural irrigation workers. Considering the clinical and serological diagnosis of leptospirosis, initiating antibiotherapy early is of vital importance because it will reduce mortality.

**Keywords:** Leptospirosis, zoonosis, thrombocytopenia, workers, irrigation

**ÖZ**

**Amaç:** Çalışma leptospiroz tanısı ile izlenen 115 hastanın klinik, laboratuvar ve epidemiyolojik özelliklerini araştırmak amacıyla yapıldı.

**Gereç ve Yöntemler:** Çalışma retrospektif ve tanımlayıcı bir çalışma olarak planlandı. Toplam 115 leptospiroz hastası retrospektif olarak analiz edildi. Serolojik tanı için mikroaglütinasyon testi kullanıldı. Veriler SPSS-22 paket programı ile analiz edildi.

**Bulgular:** Hastaların yaş ortalaması 29,4 (minimum: 10, maksimum: 65) olup, 96'sı (%83,5) erkekti. Hastaların %43,6'sı (n=50) hastaneye yatırıldı. Hastaneye kaldırılan hastalardan 5'i yoğun bakımda takibe alındı. Ölüm görülmedi. Hastaların tamamı ateş şikayeti ile başvurdu. Hepatomegali %31,3 (n=36) ile en sık görülen bulguydu. En önemli laboratuvar bulgusu hastaların %73'ünde meydana gelen tropositopeni idi. Çalışmamızın en önemli bulgusu, bu olgularda herhangi bir ölümün görülmemesiydi.

**Sonuç:** Hasta prezentasyonunun salgın dönemine denk gelmesi, ayırıcı tanıda leptospirozun düşünülmesi ve antibiyotik tedavisine erken başlanmasının mortalite görülmemesine katkı sağladığı düşünülmektedir. Çalışmamızda olguların yaşının genç olması mortalite olmamasının bir başka nedeni olabilir. Leptospiroz, tropikal bölgelerde, özellikle tarım sulama işçilerinde yaygın bir zoonoz olmaya devam etmektedir. Leptospiroz akılda tutularak klinik ve serolojik tanısı düşünüldüğünde, erken dönemde antibiyoterapiye başlanması mortaliteyi azaltacağı için hayati önem taşımaktadır.

**Anahtar Kelimeler:** Leptospiroz, zoonoz, tropositopeni, işçiler, sulama

**Address for Correspondence:** Abdullah Gölbol, Clinic of Infectious Diseases and Clinical Microbiology, University of Health Sciences Turkey, Adana City Training and Research Hospital, Adana, Türkiye
**Phone:** +90 535 379 09 79  **E-mail:** abgolbol@gmail.com  **Received:** 29.05.2024 **Accepted:** 29.07.2024 **Available Online Date:** 15.08.2024
**ORCID ID:** orcid.org/0000-0003-4999-5259

## INTRODUCTION

Leptospirosis is an acute, febrile, systemic, and zoonotic infectious disease caused by leptospira species. It is characterized by widespread vasculitis (1). Infection is transmitted to humans via the mucosal or percutaneous route after direct contact with infected animals or, more often, with leptospira-contaminated water or soil (2). Leptospirosis is frequently observed in irrigation workers, farmers, soldiers, miners, veterinarians, and sewer workers (1,2). This more common infection, particularly in tropical regions, can also cause epidemics (3). In particular, waterborne outbreaks have been reported in Southeast Asia and America (4,5). In our country, many patients are reported on a case-by-case basis (6-8).

Although the non-icteric form is seen in 90% of patients with leptospirosis, approximately 5-10% of patients have a severe form called Weil's disease, which is characterized by fever, jaundice, bleeding, and fulminant hepatorenal insufficiency. This condition progresses with severe jaundice and hepatorenal failure and has a high mortality rate (9). A definitive diagnosis of the disease is made by the presence of clinical findings and positivity to serological tests or the isolation of leptospira in urine or blood. It is known that serological tests have low sensitivity for the diagnosis of leptospirosis. Some of these patients die without being diagnosed, whereas others remain undiagnosed and recover with non-specific disease treatments (10).

In this study, we aimed to investigate the clinical, laboratory, and epidemiological characteristics of 115 patients who were followed up for the diagnosis of leptospirosis in the Kızıltepe district of Mardin.

## MATERIALS and METHODS

This retrospective and descriptive study was planned. The data on leptospirosis cases observed in Kızıltepe and Derik districts and their villages in Mardin province between 27 May 2019 and 28 July 2019 were retrospectively analyzed. The study was approved by the University of Health Sciences Turkey, Adana City Training and Research Hospital, Clinical Research Ethics Committee (decision number: 1799, date: 24.02.2022). A total of 115 patients who were hospitalized at Kızıltepe State Hospital or followed up for outpatient control were included in the study. The diagnosis of patients is based on either clinical diagnosis or serological test positivity. The clinical diagnosis depends on a history of exposure to infected animals or an environment/water that may be contaminated with animal urine, along with acute febrile illness that may be associated with any of the symptoms expected in leptospirosis like headache, myalgia, and exhaustion. The serodiagnosis of the disease in suspected patients was made

by the leptospira microagglutination test (MAT), and a titer of ≥1/200 in a single serum sample or ≥4- fold increased titer in a double serum sample was considered positive. Accordingly, 62 patients with a clinical diagnosis and 53 patients with confirmed serology were identified. Basic demographic data on patients and characteristics of disease-specific clinical and laboratory findings were obtained from hospital registry records. Complete blood count, routine biochemical tests [aspartate aminotransferase (AST), alanine aminotransferase (ALT), gamma glutamil transferase, alkaline phosphatase, etc.] coagulation tests, erythrocyte sedimentation rate, C-reactive protein (CRP) levels, hepatitis indicators (hepatitis A immunoglobulin G, hepatitis B surface antigen, AntiHBs, hepatitis B surface antibody, hepatitis C antibody), and AntiHIV were requested from the patients. Also, 8-10 mL of venous blood was taken into yellow vacutainer tubes and centrifuged at 4000 rpm for 10 min to obtain sera for MAT investigations.

### Statistical Analysis

The data were analyzed using the SPSS-22 package. Descriptive statistics were used in the evaluation of the data, and the data were presented as median [minimum-maximum (min-max) value], number, and percentage distribution.

## RESULTS

The mean age of the patients evaluated in the current study was 29.4 years (min: 10, max: 65), and 96 (83.5%) of them were men. As 58.3% (n=67) of the patients were citizens of the Republic of Turkey, all other patients were Syrian citizens and lived in Turkey. In terms of occupational distribution, 108 (93.9%) patients worked as irrigation workers, and the other 7 (6.1%) were unemployed. When the geographical region where the patients live is studied; all of the patients were from Mardin province; 20 (17.4%) of them reside in Derik, 90 (78.3%) in Kızıltepe, and 5 (4.3%) resided in other districts.

43.6% (n=50) of the patients were hospitalized, whereas the others were followed up with outpatient clinic control. Five hospitalized patients were followed up in the intensive care unit. The disease was not fatal, and all patients were cured.

When the admission symptoms and symptoms developed during the clinical follow-up of the patients were examined, it was observed that all patients presented with fever. The distribution of other symptoms is presented in Table 1.

While hepatomegaly was the most common sign 31.3% (n=36), conjunctivitis, lymphadenopathy, and splenomegaly were other common findings. The distribution of all clinical signs is presented in Table 2.

Thrombocytopenia occurs in 73% of patients, and it is the most important laboratory finding. The mean laboratory findings were; white blood cell count 100032 mm³, of which neutrophils comprised 79%; ALT, 64 International units/

liter (IU)/(L); AST, 72 IU/L; blood urea nitrogen, 17 mg/dL; creatinine, 1.11 mg/dL; total bilirubin, 1.8 mg/dL; creatine kinase, 381 IU/L; erythrocyte sedimentation rate, 32 mm/h; CRP, 99 mg/L, platelet (PLT )140000 mm³ at first admission; and lowest PLT 112000 mm³ at follow-up. The laboratory findings of the patients are summarized in Table 3.

### Table 1. Distribution of patients' symptoms

| Symptoms | Incidence rate (number) |
|---|---|
| Headache | 81.7% (n=94) |
| Nausea | 80% (n=92) |
| Vomiting | 58.3% (n=67) |
| Fever | 100% (n=115) |
| Rigors | 83.4% (n=96) |
| Diarrhea | 56.5% (n=65) |
| Sore throat | 74.8% (n=86) |
| Cough | 21.7% (n=25) |
| Jaundice | 9.6% (n=11) |
| Burning eye | 25.2% (n=29) |
| Myalgia | 94.8% (n=108) |

### Table 2. Distribution of patients' signs

| Signs | Incidence rate (number) |
|---|---|
| Hemoptysis | 2.6% (n=3) |
| Infiltration in lung X-ray | 1.7% (n=2) |
| Hepatomegaly | 31.3% (n=36) |
| Splenomegaly | 7.8% (n=9) |
| Epistaxis | 5.6% (n=6) |
| Conjunctivitis | 8.7% (n=10) |
| Maculopapular skin eruptions | 3.5% (n=4) |
| Petechial rash | 9.6% (n=11) |
| Lymphadenopathy | 7.8% (n=9) |

### Table 3. Patients' laboratory findings

| WBC | 10032 mm³ |
|---|---|
| NEU (%) | 79 |
| ALT | 64 IU/L |
| AST | 72 IU/L |
| BUN | 17 mg/dL |
| Creatinine | 1.11 mg/dL |
| Total bilirubin | 1.8 mg/dL |
| CK | 381 IU/L |
| Erythrocyte sedimentation rate | 32 mm/h |
| CRP | 99 mg/L |
| Lowest platelet | 112000/mm³ |
| First admission PLT | 140000/mm³ |

WBC: White blood cells, CRP: C-reactive protein, NEU: Neutrophile, CK: Creatine kinase, AST: Aspartate aminotransferase, BUN: Blood urea nitrogen, ALT: Alanine aminotransferase, PLT: Platelet

Two therapeutic agents were used for patient treatment. Ceftriaxone was intravenously administered with a posology of 2x1 g in hospitalized patients, and doxycycline capsules were administered with an oral posology of 2x100 mg in outpatients. In the follow-up of patients in the intensive care unit, broad-spectrum antibiotics were required due to prolonged hospitalization and nosocomial infections. One patient with pulmonary hemorrhage was treated with methylprednisolone 250 mg/day for 3 days.

## DISCUSSION

In our study, fever was the complaint of hospital admission in all of the patients who were agricultural workers. Most of them were of Syrian origin. The fact that no deaths were observed in these cases highlights the most important finding of our study. The coincidence of patient presentation to the epidemic period, consideration of leptospirosis in the differential diagnosis, and early commencement of antibiotic therapy are believed to contribute to this finding. In a retrospective case-control study conducted in New Caledonia, risk factors for the development of severe leptospirosis, in addition to infection due to Leptospira interrogans serogroup Icterohaemorrhagiae, were attributed to a delay in antibiotherapy initiation of >2 days following the onset of symptoms (11). The younger age of patients in our study may be another reason for the lack of mortality. Amilasan et al. (12) reported a 51% mortality rate that was also attributed to advanced age and delayed antibiotic therapy.

Rigors, headache, and myalgia follow fever in frequency, and they were commonly observed at similar rates as those reported in the literature. Conjunctival redness is another important but mostly overlooked sign; Vanasco et al. (13) reported that 55% of leptospirosis patients had conjunctival redness. We also found conjunctivitis in 8.7% of our patients; the reason for this inconsistency could be related to the lack of sub-conjunctival hemorrhage as a result of early treatment. Splenomegaly, lymphadenopathy, hepatomegaly, skin rash, and jaundice were observed in our patients at rates comparable to those reported in similar studies in the literature (14,15). In a study conducted by Leblebicioglu et al. (16) from our country, 12 cases were defined in the form of Weil's disease, and they detected jaundice and myalgia in all of these patients. The reason why jaundice was less common in our cases could be that leptospirosis patients were diagnosed at an early stage before the development of Weil's disease, and treatment was initiated at an early stage. The clinical findings of various studies reported from our country and the comparative data of our study are presented in Table 4.

| Frequency of symptoms and signs in various leptospirosis studies from Turkey | Current study May 2019 - July 2019 115 cases (%) | Turhan et al. (17) GATA Hospital February-July 2004 22 cases (%) | Ebrahimi (18) Çukurova University 1994-1995 12 cases (%) | Şişli Etfal Hospital 1998-2003 16 cases (%) |
|---|---|---|---|---|
| Headache | 82 | 81 | 50 | 50 |
| Nausea | 80 | 68 | 92 | 75 |
| Vomiting | 58 | 68 | 92 | 25 |
| Fever | 100 | 90 | 100 | 88 |
| Rigors | 83 | 50 | 100 | |
| Diarrhea | 56 | 40 | 8 | 25 |
| Jaundice | 10 | 9 | 92 | 100 |
| Burning eye | 25 | | | |
| Myalgia | 95 | 64 | 58 | 75 |
| Hepatomegaly | 31 | 16 | 42 | 69 |
| Splenomegaly | 8 | 12 | | 25 |
| Epistaxis | 6 | 4 | 17 | |
| Conjunctivitis | 9 | 22 | 33 | 88 |
| GATA: Gülhane Military Medical Academy | | | | |

**Table 4.** Comparison between the case series reported from our country and the clinical data of our study

Pulmonary manifestation with non-productive cough occurs in 25 to 35% of cases (14,15). Pulmonary hemorrhage is a serious complication of leptospirosis; it may not be diagnosed adequately in highly endemic regions (18). Although cough complaints developed in our patients, pulmonary hemorrhage was seen only in 2 patients. None of them developed acute respiratory distress syndrome (ARDS). This might result from early diagnosis of the infection and early initiation of treatment. Comparable to the literature, we observed leukocytosis, left shift, thrombocytopenia, hepatic transaminase elevation, renal failure, and bilirubin elevation in our patients. Chierakul et al. (19) reported thrombocytopenia as one of the most prominent findings.

The mortality rates in hospitalized patients with leptospirosis ranged from 4% to 52% (12,20). In Peru, 3.7% of 321 patients with serological and clinical evidence of leptospirosis had severe pulmonary manifestations; 71% of these manifestations resulted in death (causes include pulmonary hemorrhage, ARDS, and multiple organ failure) (21). In a retrospective review of 282 cases of leptospirosis during an outbreak in India, pulmonary involvement and central nervous system disease were identified as important predictors of death in logistic regression analysis (12). Although renal failure was present in one-fifth of our cases, the reasons why there was no death in our cases might be the early initiation of antimicrobial therapy, the absence of central nervous system involvement, and the low incidence of pulmonary hemorrhage, and thus the absence of ARDS.

**Study Limitations**

The limitations of our study are that the sample was limited to the region where the epidemic occurred and only reflected patients from a limited region. On the other hand, this is a powerful study in which a very high number of patients with leptospirosis were evaluated, and no mortality was observed.

## CONCLUSION

As a result, leptospirosis remains a common zoonosis in tropical regions, especially among agricultural irrigation workers. The differential diagnosis of acute fever in endemic areas should be considered, and the epidemiological history of the area should be investigated. Considering the clinical and serological diagnosis of leptospirosis, initiating antibiotherapy early is of vital importance because it will reduce mortality.

**Ethics**

**Ethics Committee Approval:** The study was approved by the University of Health Sciences Turkey, Adana City Training and Research Hospital, Clinical Research Ethics Committee (decision number: 1799, date: 24.02.2022).

**Informed Consent:** Retrospective study.

**Author Contributions**

Surgical and Medical Practices: A.G., N.H., Concept: A.G., N.H., Design: A.G., N.H., Data Collection or Processing: A.G., N.H.,

Analysis or Interpretation: A.G., N.H., Literature Search: A.G., N.H., Writing: A.G,. NH.

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# Investigation of the Frequency of Premenstrual Syndrome and Its Effect on Quality of Life in Women Aged 18-45 Years Working in Adana City Training and Research Hospital

## *Adana Şehir Eğitim ve Araştırma Hastanesi'nde Çalışan 18-45 Yaş Arası Kadınlarda Premenstrual Sendrom Sıklığı ve Yaşam Kalitesine Etkisinin İncelenmesi*

 Zeynep KANKILIÇ KOCA[1],  Ali İhsan ÇABUK[2],  Muhteşem Erol YAYLA[2]

[1]*Clinic of Family Medicine, Yüreğir State Hospital, Adana, Türkiye*
[2]*Clinic of Family Medicine, University of Health Sciences Turkey, Adana City Training and Research Hospital, Adana, Türkiye*

**ABSTRACT**

**Objective:** The aim of this study was to investigate the frequency of premenstrual syndrome (PMS) in women between the ages of 18-45 working University of Health Sciences Turkey, Adana City Training and Research Hospital, and to examine its effect on quality of life.

**Material and Methods:** This research was conducted on 400 women working in, University of Health Sciences Turkey, Adana City Training and Research Hospital, between 15.12.2022 and 15.06.2023. The sociodemographic data form premenstrual syndrome scale (PMSS) and quality of life scale short from-36 prepared by us were applied to the participants by asking our survey questions, which were sent face-to-face or online.

**Results:** Of the women, 48.3% had PMS. When we looked at the relationship of age with PMS symptoms, PMS symptoms were most common in the 26-29 age range, while the incidence of symptoms decreased over 41 years of age. When the effect of the education level of the participants on PMS was examined; it was observed that the incidence of PMS symptoms increased as the education level increased. When the relationship between menstruation and PMS was evaluated, the PMSS total score was found to be higher for those whose menstruation is not regular, the score for those with regular menstruation was lower.

**Conclusion:** As a result of our research, an association was found between factors such as age, education level, and regular menstrual frequency and the incidence of PMS in women. It was determined that all these changes affect the quality of life of women negatively. The effect of PMS on quality of life reveals the importance of providing support to women in coping with these symptoms.

**Keywords:** Premenstrual syndrome, quality of life, health worker, education level

**ÖZ**

**Amaç:** Bu araştırmanın amacı Sağlık Bilimleri Üniversitesi Türkiye, Adana Şehir Eğitim ve Araştırma Hastanesi, çalışmakta olan 18-45 yaş arası kadınlarda premenstrual sendrom (PMS) sıklığının araştırılması ve yaşam kalitesine etkisinin incelenmesidir.

**Gereç ve Yöntemler:** Araştırma, Sağlık Bilimleri Üniversitesi Türkiye, Adana Şehir Eğitim ve Araştırma Hastanesi 15.12.2022-15.06.2023 tarihleri arasında çalışmakta olan 400 kadın üzerinde yapılmıştır. Katılımcılara yüz yüze ya da online iletilen anket sorularımız sorulup, tarafımızca hazırlanan sosyodemografik veri formu, premenstrual sendrom ölçeği (PMSÖ) ve yaşam kalitesi ölçeği kısa form-36 uygulanmıştır.

**Bulgular:** Araştırmamıza katılan kadınların 48,3'ünde PMS vardı. Yaşın PMS semptomları ile ilişkisine baktığımızda 26-29 yaş aralığında PMS semptomları en sık görülürken, 41 yaş ve üzerinde semptom görülme sıklığı azalmıştır. Katılımcıların eğitim düzeyi arttıkça PMS semptomlarının görülme sıklığının arttığı görülmüştür. Adet düzeni ve PMS arasındaki ilişki değerlendirildiğinde PMSÖ toplam puanı adeti düzenli olmayanların en yüksek iken, adeti düzenli olanların puanı en düşüktür.

**Address for Correspondence:** Ali İhsan Çabuk, Clinic of Family Medicine, University of Health Sciences Turkey, Adana City Training and Research Hospital, Adana, Türkiye
**Phone:** +90 537 505 28 41 **E-mail:** aliihsn@hotmail.com **Received:** 28.05.2024 **Accepted:** 20.08.2024 **Available Online Date:** 15.08.2024
**ORCID ID:** orcid.org/0000-0002-6187-7020

**ÖZ**

**Sonuç:** Araştırmamızın sonucunda; yaş, eğitim düzeyi, adet düzenliliği gibi faktörler ile kadınlarda PMS görülme sıklığı arasında bir bağlantı bulunmuştur. Tüm bu değişimlerin kadınların yaşam kalitesini negatif yönde etkilediği tespit edilmiştir. PMS'nin yaşam kalitesi üzerindeki etkisinin bilinmesi bu semptomlarla başa çıkmada kadınlara verilebilecek desteğin önemi ortaya koymaktadır.
**Anahtar Kelimeler:** Premenstrual sendrom, yaşam kalitesi, sağlık çalışanı, eğitim düzeyi

## INTRODUCTION

The menstrual cycle occurs when the ovaries of the reproductive system regularly work every month (1). Emotional, behavioral, and somatic changes occur in the luteal phase (the second half of the menstrual cycle) and disappear with the onset of menstruation and are defined as premenstrual syndrome (PMS) (2,3). The most common somatic symptoms during this period are changes in appetite, breast sensitivity, fatigue, water retention in the body, weight gain, emotional fluctuations, outbreaks of anger, increased anxiety, decay, and sadness (4,5). PMS primarily affects the health of women; however, it generally affects women, their families, and the society in which they live. PMS symptoms negatively affect women's family relationships, working life, and social life, disrupting their daily quality of life (6,7). Women with PMS experience reduced quality of life due to anxiety, depression, reduced productivity at work, and increased accident rates (5-7). Knowledge of the impact of PMS on quality of life highlights the importance of supporting women in dealing with premenopausal syndrome. As a result of our study, we aimed to investigate the frequency of PMS in women working in our hospital and its impact on quality of life.

## MATERIALS AND METHODS

From 15.12.2022 to 15.6.2023, 400 women aged 18 to 45 working University of Health Sciences Turkey, Adana City Training and Research Hospital were included in this cross-sectional study. Informed consent was obtained from all participants. Volunteers filled out our questionnaires either face-to-face or online in a working environment. The participants were given the sociodemographic data form and the premenstrual syndrome scale (PMSS) and the the short form (SF-36).

### Premenstrual Syndrome Scale

The scale, which was validated in Turkish by Gençdoğan (8), was designed to measure the severity of premenstrual symptoms. The scale, which is widely used in Turkey, contains 44 statements that indicate a person's "state within just one week". The five likert-type PMS consists of nine subdimension (depressive sensation, anxiety, fatigue, nervousness, depressive thoughts, pain, changes in appetite, sleep changes and swelling). The lowest score was 44, and the highest was 220. The lower-dimensional scores are obtained by aggregating substances in these dimensions, and the total PMSS score is the sum of the lower-dimensional scores. High PMSS scores indicate more severe premenstrual symptoms.

A total of 132 points are assessed as absent PMS, whereas 132 points and above are considered as having PMS. A score exceeding 50% of the maximum limit of total and subscale scores determines absence or presence of PMS (8).

### Short Form-36 Quality of Life Scale

SF-36, one of the most commonly used generic scales for measuring quality of life, was developed by rand corporation in 1992 and conducted by Koçyiğit et al. (9) to evaluate the validity and reliability of the SF-36. The scale covers 36 elements, and these provide measurements of eight dimensions: physical, social, role constraints of physical functions, emotional problems, mental health, energy/vitality, pain, and general perception of health. The lower scale rate health from 0 to 100, with 0 indicating bad health and 100 indicating good health. The positive-rated scale improves health-related quality of life as the score of each health area increases.

The study was approved by the University of Health Sciences Turkey, Adana City Training and Research Hospital Ethics Board (decision number: 2285, date: 01.12.2022).

### Statistical Analysis

Parametric test techniques were used in this study because the scores showed a normal distribution. The t-test and analysis of variance (ANOVA) were used to analyze whether the scale scores differed from demographic characteristics. The t-test was used in the analysis of two-group demographic variables, whereas the ANOVA test was used in the analysis of group variables k (k>2). Statistical significance value $p<0.05$ was accepted.

## RESULTS

15.8% of the women who participated in our study were between the ages of 18-25 years, 36.5% between 26-29 years, 30.4% between 30-35 years, 10.3% between 36-40 years, and 7.0% who were 41 years of age or older. According to education level, 13.5% of women were high school or high school graduates, and 63.7% were university graduates. Additionally, 22.8 had a master's or doctoral degree (Table 1). There was a significant difference in the presence of PMS according to age groups (p=0.009). In terms of education level, the highest prevalence of PMS was found in the group of those with a master's or doctoral degree (60.4%), whereas the lowest rate was observed in those with secondary school or high school graduates (37.0%) (p=0.014) between educational degrees. A total of 56.4% of non-child participants had PMS, whereas only 36.7% of those with a

child had it. This finding suggests that having children can affect the prevalence of PMS. 59.5% of women with irregular periods experience PMS, whereas 45.5% of those with regular periods have PMS, and PMS was more frequently seen in women with irregular periods (p=0.026). The prevalence of PMS (56.5%) among participants who experienced pain during menstrual periods and received medical treatment for the condition was significantly higher (p=0.002). Contrary to these data, chronic disease, smoking and alcohol use, regular exercise, menstrual age, and

| Table 1. Questions regarding demographic features | | | |
|---|---|---|---|
| | | n | % |
| **What is your age?** | 18-25 | 63 | 15.8 |
| | 26-29 | 146 | 36.5 |
| | 30-35 | 122 | 30.4 |
| | 36-40 | 41 | 10.3 |
| | 41 years and older | 28 | 7 |
| **What is your educational status?** | Middle school or high school | 54 | 13.5 |
| | University | 255 | 63.7 |
| | Master/Ph.D. | 91 | 22.8 |
| **What is your job?** | Doctor | 123 | 30.8 |
| | Nurse | 109 | 27.2 |
| | Security officer | 44 | 11 |
| | Secretary | 63 | 15.7 |
| | Medical personnel | 61 | 15.3 |
| **Do you have a child?** | Yes | 166 | 41.5 |
| | No | 234 | 58.5 |
| **Do you have chronic illnesses?** | Yes | 88 | 22 |
| | No | 312 | 78 |
| **Can you describe your chronic disease?** | Cardiovascular disease | 7 | 7.8 |
| | Thyroid gland disease | 34 | 37.8 |
| | Diabetes mellitus | 4 | 4.4 |
| | Cerebrovascular disease | 0 | 0 |
| | Rheumatic disease | 21 | 23.3 |
| | Other | 24 | 26.7 |
| **Do you have a diagnosed psychiatric illness?** | Yes | 44 | 11 |
| | No | 356 | 89 |
| **Do you smoke?** | Yes | 96 | 24 |
| | No | 304 | 76 |
| **Do you drink alcohol?** | Yes | 109 | 27.3 |
| | No | 291 | 72.7 |
| **Are you exercising?** | Yes, I exercise at least half an hour 3 times a week. | 58 | 14.5 |
| | I occasionally exercise, once a week. | 151 | 37.7 |
| | No | 191 | 47.8 |
| **What is your first period's age?** | 10-12 | 120 | 30 |
| | 13-14 | 209 | 52.2 |
| | 15 years and older | 71 | 17.8 |
| **Are your periods regular?** | Yes | 321 | 80.2 |
| | No | 79 | 19.8 |
| **Are your periods painful?** | Yes | 281 | 70.3 |
| | No | 119 | 29.7 |
| **Do you receive medical treatment for painful periods?** | Yes | 191 | 47.8 |
| | No | 209 | 52.2 |
| **PMSS presence** | PMS none | 207 | 51.8 |
| | PMS exists | 193 | 48.2 |
| n: Number, Ph.D: Doctor of philosophy, PMSS: Premenstrual syndrome scale | | | |

dysmenorrhea were not associated with PMS (Table 2). The average scores were highest for those between the ages of 26-29 with fatigue, depressive thoughts, changes in appetite, pain, swelling, and premenstrual syndrome scores, while the lowest scores were for those aged 41 and over (p=0.0009).

A regression analysis was conducted to study the effect of depressive thoughts, appetite changes, sleep changes, and bloating variables on qualityof life SF-36, and the established model was found to be meaningful (p=0.003; p=0.022; p=0.004; p=0.023). When the scores were studied, the negative influence of depressive thoughts (βeta=-0.254) was found to

| Table 2. Investigation of the presence of PMS according to sociodemographic data | | PMS none | | PMS exists | | Chi-square test | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | $x^2$ | p |
| **What is your age?** | 18-25 | 35 | 55.6 | 28 | 44.4 | 13.495 | 0.009 |
| | 26-29 | 62 | 42.5 | 84 | 57.5 | | |
| | 30-35 | 70 | 57.4 | 52 | 42.6 | | |
| | 36-40 | 19 | 46.3 | 22 | 53.7 | | |
| | 41 years and older | 21 | 75.0 | 7 | 25.0 | | |
| **What is your educational status?** | Middle or high school | 34 | 63.0 | 20 | 37.0 | 8.533 | 0.014 |
| | University | 137 | 53.7 | 118 | 46.3 | | |
| | Master's/Ph. D. | 36 | 39.6 | 55 | 60.4 | | |
| **What is your job?** | Doctor | 58 | 47.2 | 65 | 52.8 | 8.987 | 0.061 |
| | Nurse | 53 | 48.6 | 56 | 51.4 | | |
| | Security Officer | 30 | 68.2 | 14 | 31.8 | | |
| | Secretary | 29 | 46.0 | 34 | 54.0 | | |
| | Medical Personnel | 37 | 60.7 | 24 | 39.3 | | |
| **Do you have a child?** | Yes | 105 | 63.3 | 61 | 36.7 | 15,037 | <0.001 |
| | No | 102 | 43.6 | 132 | 56.4 | | |
| **Do you have chronic illnesses?** | Yes | 41 | 46.6 | 47 | 53.4 | 1.203 | 0.273 |
| | No | 166 | 53.2 | 146 | 46.8 | | |
| **Can you describe your chronic disease?** | Cardiovascular Disease | 2 | 28.6 | 5 | 71.4 | 6.854 | 0.144 |
| | Thyroid Gland Disease | 18 | 52.9 | 16 | 47.1 | | |
| | Diabetes Mellitus | 3 | 75.0 | 1 | 25.0 | | |
| | Cerebrovascular Disease | 0 | 0.0 | 0 | 0.0 | | |
| | Rheumatic Disease | 5 | 23.8 | 16 | 76.2 | | |
| | Other | 11 | 45.8 | 13 | 54.2 | | |
| **Do you have a diagnosed mental illness?** | Yes | 19 | 43.2 | 25 | 56.8 | 1.454 | 0.228 |
| | No | 188 | 52.8 | 168 | 47.2 | | |
| **Do you smoke?** | Yes | 46 | 47.9 | 50 | 52.1 | 0.743 | 0.389 |
| | No | 161 | 53.0 | 143 | 47.0 | | |
| **Do you drink alcohol?** | Yes | 51 | 46.8 | 58 | 53.2 | 1.477 | 0.224 |
| | No | 156 | 53.6 | 135 | 46.4 | | |
| **Are you exercising?** | Yes | 29 | 50.0 | 29 | 50.0 | 2.820 | 0.244 |
| | Occasionaly | 71 | 47.0 | 80 | 53.0 | | |
| | No | 107 | 56.0 | 84 | 44.0 | | |
| **What is your first period's age?** | 10-12 | 63 | 52.5 | 57 | 47.5 | 0.506 | 0.777 |
| | 13-14 | 105 | 50.2 | 104 | 49.8 | | |
| | 15 years | 39 | 54.9 | 32 | 45.1 | | |
| **Are your periods regular?** | Yes | 175 | 54.5 | 146 | 45.5 | 4.984 | 0.026 |
| | No | 32 | 40.5 | 47 | 59.5 | | |
| **Are your periods painful?** | Yes | 140 | 49.8 | 141 | 50.2 | 1.406 | 0.236 |
| | No | 67 | 56.3 | 52 | 43.7 | | |
| **Do you receive medical treatment for painful periods?** | Yes | 83 | 43.5 | 108 | 56.5 | 10.072 | 0.002 |
| | No | 124 | 59.3 | 85 | 40.7 | | |
| PMS=Premenstrual syndrome, $X^2$= Chi-square test, *p<0.05, | | | | | | | |

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be significant in the positive direction of appetite change (βeta=0.132), sleep change in the negative direction (βeta=-0.198), and obesity in the positive direction (βeta=0.129). The effects of fatigue, depression, anxiety, nervousness, and pain on quality of life were not significant (p>0.05) (Table 3).

Physical power, emotional power, energy/vitality, mental health, social functioning, pain, general health, and quality of life total SF-36 scores varied depending on the presence of PMS (p=0.021; p<0.001; p<0.001; p<0.001; p<0.001; p<0.001; p<0.001; p<0.001). The average scores for physical role strength, emotional role power, energy/vitality, mental health, social functioning, pain, general health, and quality of life SF-36 were highest for non-PMS patients and lowest for those with PMS (Table 4).

In terms of the relationship between the PMS subdimensions and the SF-36 scale, there was a negative, weak relationship between fatigue and physical role strength, emotional role force, vitality, mental health, social functionality, pain, general health, and overall quality of life SF-36 (r=-0.189, p<0.001; r=-0.276, p<0.001; r=-0.337, p<0.001; r=-0.305 p<0.001; r=-0.288, p<0.001; r=-0.257, p<0.001; r=-0.201, p<0.001; r=-0.283, p<0.001). There was a negative, weak correlation between depressive emotion and physical role strength, emotional role strength, social functioning, pain, general health, and overall quality of life SF-36 (r=-0.138, p=0.006; r=-0.252; p<0.001; r=-0.212, p<0.001; r=-0.240, p<0.001; r=-0.254, p<0.001) There was a negative, weak, strong relationship between depressive thoughts and emotional role strength, mental health, social functioning, pain, general health, and overall quality of life SF-36 (r=-0.319, p<0.001; r=-0.445; p<0.001); r=-0.321, p<0.001; r=-0.334, p<0.001 r=-0.308, p<0.001; r=-0.375, p<0.001). There was a negative, weak-strong relationship between anxiety and mental health, social functionality, and quality of life overall SF-36 (r=-0.410, p<0.001; r=-0.369, p<0.001; r=0.336, p<0.001) There was a negative weak-strong relationship between nervousness and physical role strength, emotional role power, energy/ vitality, social functioning, pain, general health, and overall quality of life SF-36 (r=-0.157, p<0.001; r=-0.195, p<0.001; r=-0.203, p<0.001; r=-0.234, p<0.001; r=-0.151, p<0.03; r=-0.246, p<0.001) (Table 5).

### Table 3. Results regarding the impact of premenstrual syndrome subdimensions on quality of life

| Dependent variable | Independent variable | Beta | t | p | R² | F |
|---|---|---|---|---|---|---|
| Quality of life (SF-36) | Fatigue | 0.053 | 0.565 | 0.572 | 0.196 | 10.564 |
| | Depressive mood | -0.006 | -0.071 | 0.944 | | |
| | Depressive thoughts | -0.254 | -3.036 | 0.003 | | |
| | Anxiety | -0.091 | -1.233 | 0.218 | | |
| | Nervousness | -0.020 | -.262 | 0.793 | | |
| | Appetite changes | 0.132 | 2.295 | 0.022 | | |
| | Pain | -0.103 | -1.638 | 0.102 | | |
| | Sleep changes | -0.198 | -2.927 | 0.004 | | |
| | Bloating | 0.129 | 2.279 | 0.023 | | |

*p<0.05: Linear regression test, SF-36: Short form 36

### Table 4. Differentiating quality of life scores according to PMS presence

| PMSS density | | n | x | SD | p |
|---|---|---|---|---|---|
| Physical function | PMS none | 207 | 76.06 | 23.38 | 0.957 |
| | PMS exists | 193 | 76.19 | 24.14 | |
| Physical power | PMS none | 207 | 73.07 | 39.13 | 0.02* |
| | PMS exists | 193 | 63.73 | 41.05 | |
| Emotional power | PMS none | 207 | 66.99 | 40.76 | <0.00* |
| | PMS exists | 193 | 46.11 | 43.68 | |
| Energy/vitality | PMS none | 207 | 52.37 | 17.52 | <0.00* |
| | PMS exists | 193 | 44.95 | 12.90 | |
| Mental health | PMS none | 207 | 64.71 | 15.64 | <0.00* |
| | PMS exists | 193 | 55.19 | 13.97 | |
| Social functioning | PMS none | 207 | 63.47 | 25.49 | <0.00* |
| | PMS exists | 193 | 52.66 | 23.80 | |
| Pain | PMS none | 207 | 68.18 | 20.86 | <0.001* |
| | PMS exists | 193 | 60.31 | 18.37 | |
| General health | PMS none | 207 | 61.88 | 17.32 | <0.001* |
| | PMS exists | 193 | 55.21 | 14.57 | |
| Sf-36 total | PMS none | 207 | 67.00 | 15.79 | <0.001* |
| | PMS exists | 193 | 60.14 | 13.81 | |

PMSS: Premenstrual syndrome scale, x: Mean, SD: Standard deviation *p<0.05: t-test, PMS: Premenstrual syndrome

| Table 5. Relationship between premenstrual syndrome sub-dimensions and quality of life sub-dimensions | | Fatigue | Depressive affect | Depressive thoughts | Anxiety | Irritability | Appetite changes | Pain |
|---|---|---|---|---|---|---|---|---|
| Fatigue | r | 1 | | | | | | |
| | p | | | | | | | |
| Depressive affect | r | **0,774\*\*** | 1 | | | | | |
| | p | 0,000 | | | | | | |
| Depressive thoughts | r | 0,741\*\* | **0,695\*\*** | 1 | | | | |
| | p | 0,000 | 0,000 | | | | | |
| Anxiety | r | **0,656\*\*** | 0,668\*\* | **0,741\*\*** | 1 | | | |
| | p | 0,000 | 0,000 | 0,000 | | | | |
| Irritability | r | **0,765\*\*** | **0,659\*\*** | **0,697\*\*** | **0,549\*\*** | 1 | | |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | | | |
| Appetite changes | r | **0,485\*\*** | **0,495\*\*** | **0,413\*\*** | **0,346\*\*** | **0,481\*\*** | 1 | |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | |
| Pain | r | **0,627\*\*** | **0,506\*\*** | **0,579\*\*** | **0,548\*\*** | **0,558\*\*** | **0,429\*\*** | 1 |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | |
| Sleep changes | r | **0,677\*\*** | **0,585\*\*** | **0,644\*\*** | **0,605\*\*** | **0,543\*\*** | **0,462\*\*** | **0,569\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Bloating | r | **0,513\*\*** | **0,494\*\*** | **0,449\*\*** | **0,413\*\*** | **0,512\*\*** | **0,477\*\*** | **0,388\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Total premenstrual syndrome scale scores | r | **0,900\*\*** | **0,860\*\*** | **0,877\*\*** | **0,812\*\*** | **0,826\*\*** | **0,609\*\*** | **0,715\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Physical function | r | -0,010 | 0,025 | -0,085 | -0,083 | -0,092 | **0,129\*\*** | **-0,130\*\*** |
| | p | 0,848 | 0,618 | 0,089 | 0,098 | 0,067 | 0,010 | 0,009 |
| Physical role strength | r | -**0,189\*\*** | -**0,138\*\*** | -**0,212\*\*** | -**0,157\*\*** | -0,122\* | -0,115\* | -**0,202\*\*** |
| | p | 0,000 | 0,006 | 0,000 | 0,002 | 0,015 | 0,021 | 0,000 |
| Emotional role strength | r | -**0,276\*\*** | -**0,252\*\*** | -**0,319\*\*** | -**0,260\*\*** | -**0,195\*\*** | -**0,178\*\*** | -**0,257\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Energy/vitality | r | -**0,337\*\*** | -**0,327\*\*** | -**0,299\*\*** | -**0,279\*\*** | -**0,203\*\*** | -0,065 | **-0,104\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,192 | 0,037 |
| Mental Health | r | -**0,305\*\*** | -**0,348\*\*** | -**0,445\*\*** | -**0,410\*\*** | -**0,309\*\*** | -0,062 | -**0,207\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,213 | 0,000 |
| Social functioning | r | -**0,288\*\*** | -**0,212\*\*** | -**0,321\*\*** | -**0,369\*\*** | -**0,203\*\*** | -**0,140\*\*** | -**0,193\*\*** |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,005 | 0,000 |
| Pain | r | -0,257\*\* | -0,258\*\* | -0,334\*\* | -0,287\*\* | -0,234\*\* | -0,106\* | -0,241\*\* |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,034 | 0,000 |
| General health | r | -0,201\*\* | -0,240\*\* | -0,308\*\* | -0,290\*\* | -0,151\*\* | -0,046 | -0,211\*\* |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,003 | 0,354 | 0,000 |
| Quality of life total (SF- 36) | r | -0,283\*\* | -0,254\*\* | -0,375\*\* | -0,336\*\* | -0,246\*\* | -0,065 | -0,286\*\* |
| | p | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,193 | 0,000 |

**Table 5. Continued**

| | Sleep changes | Bloating | Total premenstrual syndrome scale scores | Physical function | physical role strength | Emotional role strength | Energy/vitality | Mental health | Social functioning | Pain | General health | Quality of life total (SF-36) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fatigue | | | | | | | | | | | | |
| Depressive affect | | | | | | | | | | | | |
| Depressive thoughts | | | | | | | | | | | | |
| Anxiety | | | | | | | | | | | | |
| Irritability | | | | | | | | | | | | |
| Appetite changes | | | | | | | | | | | | |
| Pain | | | | | | | | | | | | |
| Sleep changes | 1 | | | | | | | | | | | |
| Bloating | **0,427** | 1 | | | | | | | | | | |
| | 0,000 | | | | | | | | | | | |
| Total premenstrual syndrome scale scores | **0,765** | **0,626** | 1 | | | | | | | | | |
| | 0,000 | 0,000 | | | | | | | | | | |
| Physical function | **-0,119*** | 0,074 | -0,045 | 1 | | | | | | | | |
| | 0,017 | 0,138 | 0,366 | | | | | | | | | |
| Physical role strength | **-0,237** | -0,036 | **-0,200** | **0,328** | 1 | | | | | | | |
| | 0,000 | 0,468 | 0,000 | 0,000 | | | | | | | | |
| Emotional role strength | **-0,261** | **-0,196** | **-0,314** | **0,175** | **0,397** | 1 | | | | | | |
| | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | | | | | | |
| Energy/vitality | **-0,230** | -0,072 | **-0,299** | **0,227** | **0,178** | **0,172** | 1 | | | | | |
| | 0,000 | 0,152 | 0,000 | 0,000 | 0,000 | 0,001 | | | | | | |
| Mental Health | **-0,321** | -0,091 | **-0,384** | **0,294** | **0,201** | **0,199** | **0,584** | 1 | | | | |
| | 0,000 | 0,069 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | | | | |
| Social functioning | **-0,331** | **-0,138** | **-0,320** | **0,326** | **0,384** | **0,400** | **0,336** | **0,357** | 1 | | | |
| | 0,000 | 0,006 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | | | |
| Pain | **-0,231** | **-0,117*** | **-0,306** | **0,288** | **0,449** | **0,362** | **0,313** | **0,325** | **0,498** | 1 | | |
| | 0,000 | 0,020 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | | |
| General health | **-0,241** | -0,017 | **-0,260** | **0,282** | **0,277** | **0,207** | **0,345** | **0,525** | **0,357** | **0,421** | 1 | |
| | 0,000 | 0,727 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | | |
| Quality of life total (SF-36) | **-0,338** | -0,070 | **-0,334** | **0,737** | **0,693** | **0,571** | **0,506** | **0,586** | **0,627** | **0,610** | **0,590** | 1 |
| | 0,000 | 0,164 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | |

r: Spearman's rho value, *p<0.05

A regression analysis was carried out to study the effect of the PMS variable on quality of life SF-36, and it was found to be significant that PMS had a negative effect (p<0.001) (Table 6).

| Table 6: The premenstrual syndrome on quality of life | | | | | | |
|---|---|---|---|---|---|---|
| Dependent Variable | Independent variable | Beta | t | p | R² | F |
| Total qulaity of life (SF-36) | Premenstrual syndrome | -0.334 | -7.07 | <0.001 | 0.112 | 49.989 |

*p<0,05: Linear regression test

## DISCUSSION

This study aimed to determine the PMS and quality of life of hospitalized women. In the study, 57.5% of the 26-29 year-olds and 25% of those under 41 years of age and older suffer from PMS. Similarly, in the study conducted by Demir et al. (10), the majority of women were in the 24-28 age group (44.1%), while the group aged 39 years and over (4.3%) constituted the lowest proportion. According to the literature, PMS symptoms have been shown to decrease with age because women are more able to tolerate and develop ways to cope with PMS over time.

When the impact of the level of education of participants on the prevalence of PMS was studied, the highest rate was found in those with a master's or doctoral degree (60.4%), whereas the lowest rate was found in those with secondary school or high school graduates (37.0%). In support of our study, Khella (11) showed that PMS symptoms are more common and more severe among highly educated women with possible stress associations with PMS than among women with lower educational levels.

In our study, 56.4% of non-child participants experienced PMS, whereas only 36.7% of those with children had PMS. Contrary to the relationship between fertility and PMS violence we found in this study, Önal (12) found that 73.2% of women with PMS have children. When evaluating the relationship between the age of first menstruation and the presence of PMS, the lower dimensions of the PMS included appetite changes that differed from those of the first menstrual age (p<0.05). According to the mean scores, appetite changes were higher in those aged 13-14 years at menarche and lower in those aged 15 years and older.

Duster, adera, and south-paul found that women aged 12 years or younger were 1.6 times more likely to develop PMS during menopause. (13). In support of this finding, a study by Öztürk (14) found that women diagnosed with PMS had a shorter time to first menstruation than those who did not have PMS.

In this study, the prevalence of PMS in women aged 18-45 years was 48.3%. The prevalence of PMS was 57.4% in a 2012 study of college students with short and close colleagues (15). While PMS symptoms pose a threat to a person's health when assessed individually, it should not be forgotten that they also affect family, friends, and the working environment, thereby imposing socioeconomic burdens on society. PMS is a major health problem for women suffering from symptoms such as impotence, anxiety, depression, and suicide. PMS leads to physical and psychological changes in women. These changes have a negative impact on women's family life, social relations, school life, and work. It has been found to affect women's mental health, including loss of capacity, anxiety, depression, and suicide, and negatively affects their quality of life. Understanding the impact of PMS on quality of life highlights the importance of providing support for women in dealing with these symptoms.

### Study Limitation

The study is cross-sectional in nature and does not report cause and effect. The fact that the study was conducted in a single center is one of the limitations of the study.

## CONCLUSION

It is one of the tasks of general practitioners to tell women that these symptoms are seen by many, to tell them that this is a health problem that reduces their quality of life, and to guide them to manage these symptoms.

aged 18-45 years working in "University of Health Sciences Turkey, Adana City Training and Research Hospital."

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# Rare Causes of Abdominal Mass in Infants: Hydrocolposis and Hydronephrosis Due to Imperforate Hymen

*Bebeklerde Karın Kitlelerinin Nadir Nedeni: İmperfore Hymen'e Bağlı Hidrokolpos ve Hidronefroz*

🔘 Şule ÇALIŞKAN KAMIŞ, 🔘 Metin ÇİL, 🔘 Begül YAĞCI KÜPELİ

*Department of Pediatric Hematology and Oncology, University of Health Sciences Turkey, Adana Faculty of Medicine; Adana City Training and Research Hospital, Adana, Türkiye*

**ABSTRACT**

The epidemiology of pediatric abdominal masses varies according to age. Although malignant masses are more common in older children, benign masses are more common during the neonatal period and infancy. Here, we present a case of a baby with hidrocolpos and hydronephrosis due to imperforated hymen (IH). A 6-week-old female infant presented with abdominal distension after 2 weeks. The patient was admitted to our clinic after an abdominal mass was detected on ultrasonography (USG) performed at another center. Physical examination revealed abdominal distention and dullness on percussion, suggesting the presence of fluid or a mass, and a firm, non-palpable abdomen on palpation. A mass was visible on the direct abdominal X-ray. Subsequent USG performed at our hospital revealed a 10-cm cystic mass extending to the right upper quadrant of the abdomen, accompanied by hydronephrosis. Pediatric surgery was requested from the patient. IH was detected in the infant. Abdominal computed tomography revealed vaginal atresia. The patient was surgically treated with hymenotomy and pus drainage. The appearance of the mass improved on direct abdominal X-ray taken after the surgery. In conclusion, IH is a rare disease that is often missed in diagnosis. Therefore, clinicians should adopt a multisystemic approach that emphasizes the importance of thorough physical examination, including a complete genital examination.

**Keywords:** Hydrocolpos, hydronephrosis, imperforate hymen

**ÖZ**

Pediatrik karın kitlelerinin epidemiyolojisi yaş gruplarına göre değişiklik gösterir. Malign kitleler yaşlı çocuklarda daha yaygınken, benign kitleler neonatal dönem ve bebeklik döneminde daha yaygındır. Burada, imperforate hymen (IH) nedeniyle hidrokolpos ve hidronefroz olan bir bebek vakasını sunuyoruz. 6 haftalık bir kız bebek, 2 haftadır karın şişliği şikayetiyle başvurdu. Hasta, başka bir merkezde yapılan ultrasonografi (USG) sonucunda karın kitlesi tespit edilmesinin ardından kliniğimize kabul edildi. Fizik muayenede karın distansiyonu, sıvı veya kitle varlığını düşündüren perküsyonla matlık ve palpasyonda sert, non-palpable bir karın gözlemlendi. Direkt karın röntgeninde bir kitle görüldü. Hastanemizde yapılan USG'de, karın sağ üst kadranına uzanan 10 cm'lik kistik bir kitle ve hidronefroz görüldü. Pediatrik cerrahi konsültasyonu istendi. Bebekte IH tespit edildi. Hastanın abdominal bilgisayarlı tomografisi vajinal atrezisi ile uyumluydu. Hasta, hymenotomi ve apsenin drenajı ile cerrahi olarak tedavi edildi. Cerrahiden sonra çekilen direkt karın röntgeninde kitlenin görünümü iyileşti. Sonuç olarak, IH nadir bir hastalıktır ve teşhis sıklıkla gözden kaçabilir. Bu nedenle, klinik olarak çok sistemli bir yaklaşım benimsenmeli ve kapsamlı fizik muayenelerin, özellikle tam bir genital muayenenin önemi vurgulanmalıdır.

**Anahtar Kelimeler:** Hidrokolpos, hidronefroz, imperfore hymen

**Address for Correspondence:** Şule Çalışkan Kamış, Department of Pediatric Hematology and Oncology, University of Health Sciences Turkey, Adana Faculty of Medicine; Adana City Training and Research Hospital, Adana, Türkiye
**Phone:** +90 532 455 90 00 **E-mail:** sulecaliskan87@yahoo.com **Received:** 28.05.2024 **Accepted:** 20.08.2024 **Available Online Date:** 15.08.2024
**ORCID ID:** orcid.org/0000-0003-0008-303X

## INTRODUCTION

Abdominal masses are common in pediatric patients. Abdominal masses have a wide range of differential diagnoses, including benign and malignant tumors (1). When examining pediatric "abdominal masses", malignancies are a possibility to be considered (2). The epidemiology of pediatric abdominal masses varies according to age. Although malignant masses are more common in older children, benign masses are more common during the neonatal period and infancy (3-8). Here, we present an infant with hydrocolpos and hydronephrosis due to imperforate hymen (IH). Consent was obtained from the patient and her family.

## CASE REPORT

**Anamnesis and Physical Examination**

A 6-week-old female infant was born at 38 weeks of gestation via normal vaginal delivery, weighing 4.030 g. The patient had a 2-week history of abdominal swelling. On physical examination, abdominal distension was noted, and a mass was observed on the direct abdominal X-ray. However, inadequate evaluation during primary care led to delayed diagnosis and unnecessary referral to a higher-level specialist. The increasing patient load and limited time available for thorough assessments in primary care often result in early referrals, which can cause unnecessary workload in the health system and undue anxiety for parents.

**Diagnostic Evaluation**

**a. Laboratory Tests**

• White blood cell (WBC) count, hemoglobin (Hb), mean corpuscular volume (MCV), and platelet count: these tests were requested to assess the presence of an underlying inflammatory process or hematological disorder that might be contributing to abdominal distension.

• Tumor markers (CA-15-3, AFP, B-HCG): these markers were measured to rule out malignancy and to determine whether the abdominal mass was benign or malignant.

**b. Imaging Methods**

• Direct abdominal X-ray: this was performed to identify the cause of the abdominal distension and confirm the presence of an abdominal mass (Figure 1).

• Ultrasonography (USG): the initial USG performed at another center identified well-circumscribed bilateral masses. Follow-up USG at our hospital was conducted to further evaluate the size, location, and associated conditions of hydronephrosis. Direct abdominal X-ray findings were also considered.

• Abdominal computed tomography (CT): this technique was requested to provide detailed imaging of the mass (Figure 2),

assess anatomical relationships, and identify other structural anomalies, such as ureteral and vaginal atresia.

Laboratory results showed a WBC count of 13.1 x 10³/μL, Hb of 11 g/dL, and MCV of 91 fL. The tumor markers were CA-15-3 at 13.3 U/mL, AFP at 82.1 μg/L, and B-HCG <0.5. USG performed at another center revealed bilateral mass lesions measuring 12x8x11 cm, which were presumed to originate from the kidneys. Direct abdominal X-ray identified a mass. USG at our hospital revealed a 10-cm cystic mass extending to the right upper quadrant, accompanied by hydronephrosis, dilated pelvicalyceal systems, and a tortuous left ureter.
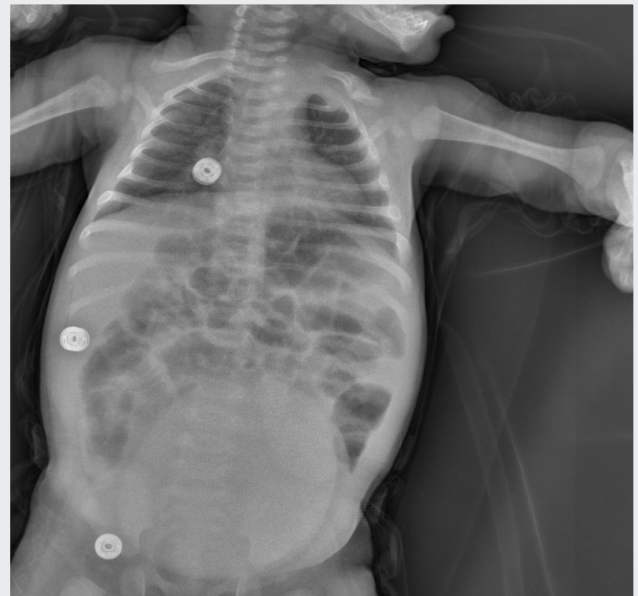


**Figure 1.** Patient's direct abdominal X-ray, demonstrating abdominal mass
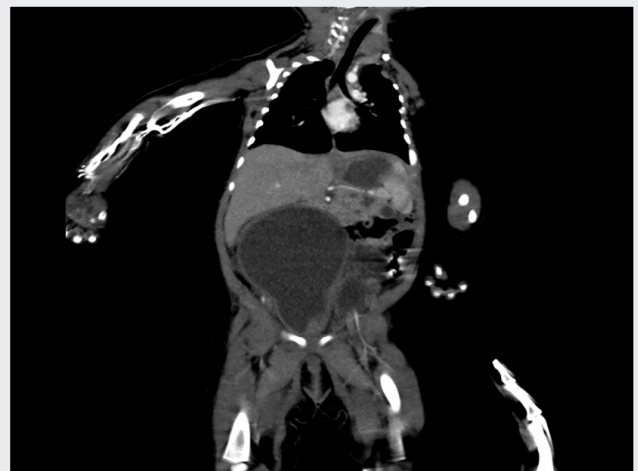


**Figure 2.** Abdominal CT showing cystic structure with fluid in the abdomen

CT: Computed tomography

Abdominal CT imaging revealed two distended cystic structures thought to be the uterus, cervix, and bladder, and a fluid-filled cystic structure in the abdomen, suggestive of ureteral and vaginal atresia. Grade 2 ectasia was detected in the pelvicalyceal systems of both kidneys.

**Diagnosis and Treatment**

A pediatric surgery consultation was performed to further evaluate the findings. The diagnosis of IH with hydrocolpos was based on imaging and clinical presentation. The treatment plan included surgical intervention, which involved incision of the imperforate hymen and drainage of accumulated pus. Postoperative evaluation revealed improvement in the appearance of the abdominal mass, as seen on direct abdominal X-ray taken after the operation (Figure 3).

## DISCUSSION

Neonatal hydrocolpos is a rare condition (9). In infants with IH, hydrocolpos caused by maternal estrogen is often discovered incidentally (10-12). An imperforate hymen may exert pressure on the urinary system, leading to hydronephrosis (13,14). The incidence of IH is approximately 0.1% (15). Diagnosis is frequently delayed because the condition is asymptomatic and rare (16). IH is commonly diagnosed after menarche, and its symptoms include amenorrhea, abdominal pain, and urinary retention. Typically, IH patients are asymptomatic. In rare cases, hydrocolpos can cause hydrocolpos, presenting as an abdominal mass in approximately 0.006% of infants (17-19). Our patient presented with an abdominal mass Ramareddy et al. (20) reported eight consecutive cases of IH from 2010 to 2015, of which two were identified in infancy. In seven of these cases, genitourinary obstruction was noted.
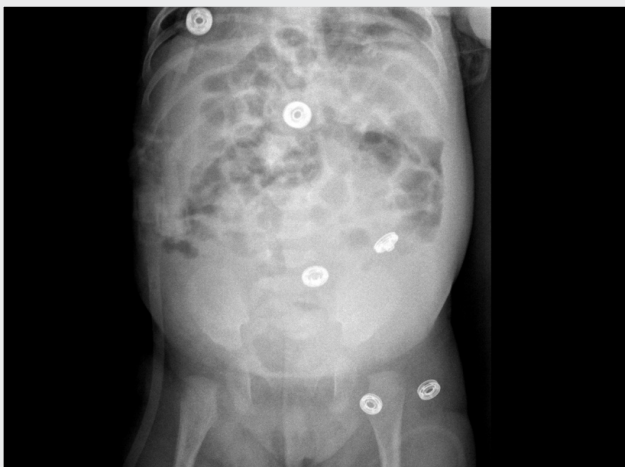


**Figure 3.** Patient's direct abdominal X-ray, taken after surgery demonstrating disappearance of abdominal mass

Eksioglu et al. (21) described a rare case of IH associated with a bicornuate uterus and bilateral hydroureteronephrosis while investigating a pelvic mass in an 8-month-old infant. In our case, both hydronephrosis and IH were present.

Neonatal hydrocolpos is an exceptionally rare condition that is often discovered incidentally in infants with an IH (9). This condition is typically linked to maternal estrogen exposure, which can lead to the accumulation of fluid in the vagina, resulting in hydrocolpos (10-12). The pressure exerted by hydrocolpos can affect the urinary system, potentially causing hydronephrosis. Although IH has an incidence rate of approximately 0.1%, its diagnosis is frequently delayed because of its asymptomatic nature in the neonatal period (13-15). Symptoms and diagnoses are often made later in menarche, when typical symptoms such as amenorrhea, abdominal pain, and urinary retention become apparent.

In rare cases, IH can present with hydrocolpos as an abdominal mass, with an incidence of approximately 0.006% in infants (17-19). Our case is consistent with this rare presentation. The infant presented with an abdominal mass, which is consistent with the findings in the literature. For instance, Ramareddy et al. (20) reported eight cases of IH, two of which were diagnosed in infancy. Notably, seven out of these eight cases exhibited genitourinary obstruction, highlighting the significant effect of IH on urinary tract function.

Similarly, Eksioglu et al. (21) reported an unusual case of IH associated with a bicornuate uterus and bilateral hydroureteronephrosis in an 8-month-old infant. This case further illustrates the diversity of clinical presentations of IH and the importance of thorough diagnostic evaluation when encountering atypical findings.

In our case, the presence of both hydronephrosis and IH underscored the complexity of the condition. The abdominal mass was detected via imaging studies and managed surgically by incision of the hymen and drainage of hydrocolpos. Postoperative imaging showed significant improvement, supporting the effectiveness of timely surgical intervention in managing such rare conditions.

**Clinical Implications**

**Early Detection:** Given the rarity and potential for delayed diagnosis of IH, clinicians should maintain a high index of suspicion when confronted with an abdominal mass in an infant, especially if other symptoms are present.

**Imaging and Diagnosis:** Comprehensive imaging, including ultrasound and computed tomography, plays a crucial role in the diagnosis and management of IH. Accurate imaging is essential for identifying associated conditions like hydronephrosis and understanding the extent of obstruction.

**Management:** Surgical intervention, including incision of the hymen and hydrocolpos drainage, is often necessary for symptomatic relief and to prevent further complications. Early surgical intervention can improve outcomes and prevent long-term sequelae.

**Future Research:** Further studies are needed to better understand the pathophysiology of IH and its associated complications. Additionally, studies on the long-term outcomes of infants with IH who are treated surgically could provide valuable insights into the management and prognosis of this rare condition.

## CONCLUSION

In conclusion, IH is a rare disorder that is often missed in diagnosis. Therefore, clinicians should adopt a multisystemic approach that emphasizes the importance of thorough physical examination, including a complete genital examination.

### Ethics

**Informed Consent:** Informed consent was obtained from all participants.

### Author Contributions

Concept: M.Ç., B.Y.K., Design: Ş.Ç.K., M.Ç., B.Y.K., Data Collection or Processing: Ş.Ç.K., M.Ç., Analysis or Interpretation: B.Y.K., Literature Search: Ş.Ç.K., M.Ç., B.Y.K., Writing: Ş.Ç.K.

**Conflict of Interest:** All authors declare that they have no conflict of interest.

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