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Research Article

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AN INVESTIGATION OF THE RELATIONSHIP OF URINARY INCONTINENCE AND FATIGUE LEVEL AND SLEEP QUALITY IN PREGNANCY

GEBELİKTE ÜRİNER İNKONTİNANSIN YORGUNLUK DÜZEYİ VE UYKU KALİTESİ İLE İLİŞKİSİNİN İNCELENMESİ

Hacer Alan Dikmen[1], Hamide Yildirim[2], Kamile Marakoğlu[3]

[1]Department of Midwifery, Selcuk University, Konya
[2]Institude of Health Sciences, Selcuk University, Konya
[3]Department of Family Medicine, Selcuk University, Konya

Yazışma Adresi / Correspondence:
Dr. Öğr. Üyesi Hacer Alan Dikmen (e-mail: alanhacer@selcuk.edu.tr)

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Ankara Yıldırım Beyazıt University Faculty of Medicine
Department of Family Medicine

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Öz

Amaç: Bu çalışmanın amacı, gebelikte yaşanan üriner inkontinans ile yorgunluk düzeyi ve uyku kalitesi arasındaki ilişkiyi incelenmektir.

Materyal ve Metot: Tanımlayıcı ve kesitsel türde yapılan çalışmanın verileri, Ocak-Mart 2020 tarihleri arasında, bir kadın doğum hastanesinin gebe polikliniğine başvuran 311 gebeden (okur-yazar, 18-49 yaş aralığında, tek fetüse sahip, iletişim kurulabilen, infertilite tedavisi sonucu gebe olmayan, idrar yolu enfeksiyonu ve herhangi bir kronik hastalığı olmayan), kişisel bilgi formu, İnkontinans Şiddet İndeksi (İŞİ), Pittsburgh Uyku Kalitesi İndeksi (PUKİ) ve Yorgunluk Şiddeti Ölçeği (YŞÖ) ile toplanmıştır.

Bulgular: Çalışmamızda gebelerin yaş ortalaması 27,25±5,64, gebelik haftası ortalaması 29,46±9,58'di. Gebelerin %61,10'unda (190) üriner inkontinans şikâyeti vardı, %68,80'inin (214) uyku kalitesi kötüydü. Gebelerin %46,60'ı (145) "yorgundu." Çalışmamızda gebelerin İŞİ ve PUKİ puan ortalaması arasında istatistiksel olarak anlamlı, pozitif yönde ve düşük düzeyde (r= 0,209; p<0,001) ilişki saptanırken, YŞÖ ile istatistiksel olarak anlamlı bir ilişki saptanmadı (p=0,184).

Sonuç: Çalışmamızda gebelerin üriner inkontinans düzeyi arttıkça kötü uyku kalitesi artmaktaydı. Gebelerin üriner inkontinans düzeyi ile yorgunluk düzeyleri arasında ise bir ilişki yoktu. Sağlık profesyonelleri antenatal izlemlerde, gebelerin üriner inkontinans, uyku ve yorgunluk düzeylerini mutlaka değerlendirmeli ve inkontinans varlığı saptanan gebelerde baş etme ve tedavi noktasında gerekli bakım uygulamaları önerilmelidir.

Anahtar Kelimeler: Gebelik, üriner inkontinans, yorgunluk, uyku.

Abstract

Objectives: This study aimed to investigate the relationship between urinary incontinence and fatigue level and sleep quality during pregnancy.

Materials and Methods: This descriptive and cross-sectional study was conducted in 311 pregnant women (literate, in an age range of 18-49 years, singleton pregnant, able to communicate, did not get pregnant as a result of infertility treatment, without a urinary tract infection or a chronic disease) who were presented to the pregnant polyclinic of a maternity hospital between January and March 2020. The data were collected using a personal information form, Incontinence Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), and Fatigue Severity Scale (FSS).

Results: In our study, the mean age of the participants was 27.25±5.641 years, and the mean gestational week was 29.46±9.581. 61.10% of the pregnant women (190) had urinary incontinence; sleep quality of them was "bad" in 68.80% (214). 46.60% (145) of the pregnant women were "fatigued". In our study, there was a significant positive and low-level correlation between the ISI and the PSQI mean scores (r=0.209; p <0.001); no significant correlation was found between ISI and the YSS (p=0.184).

Conclusion: In our study, as the urinary incontinence level increased, poor sleep quality increased. There was no relationship between urinary incontinence and fatigue levels in pregnant women. During antenatal, health care professionals should evaluate the urinary incontinence, sleep quality, and fatigue levels of pregnant women, and require care practices should be offered involving coping strategies and treatment modalities in pregnant women with incontinence.

Keywords: Pregnancy, urinary incontinence, fatigue, sleep.

Introduction

Although pregnancy is a natural process, it is a period in which many physiological, anatomical, psychological, and emotional changes occur.[1] Anatomical and physiological changes occur during pregnancy in the urinary system similar to many other body systems. Due to the growing uterus during pregnancy, intra-abdominal pressure increases, and pelvic organs are pushed downward. This change gets the pelvic floor muscles to be strained and causes a mechanical condition where pelvic support is negatively affected. Urinary incontinence may develop as a result of this strain.[2,3]

The International Continence Society (ICS) defined urinary incontinence as "the complaint of involuntary urine loss".[4] Obesity, pelvic surgery for colon, cervical, or ovarian cancer, lower urinary tract infections, smoking, chronic coughing, consumption of alcohol and caffeinated beverages, chronic constipation, pregnancy, and birth trauma are among the risk factors for urinary incontinence.[2, 5] Physiological changes during pregnancy may predispose to urinary incontinence as well as exacerbate existing urinary incontinence complaints. The global prevalence of urinary incontinence during pregnancy has been reported to be in a range from 18.90% to 75.25%.[2,6,7]

Although urinary incontinence is a common problem in pregnancy, the possibility of intervention decreases in women due to denial, hiding, non-acceptance, guilt, and shame they experience.[8] Ongoing feeling of wetness- and irritation-related discomfort in women cause isolation from social life, depression, anxiety, decrease in self-esteem, and limitation in daily activities.[9] In addition, due to urinary incontinence, pregnant women frequently visit the toilet, change their underwear, and interrupt their night sleep, all of which can increase their fatigue levels and reduce their sleep quality. Sleep disorders during pregnancy can lead to obstetric complications, preterm birth, premature rupture of membranes, increased cesarean rates, and adverse effects on glucose tolerance and blood pressure.[10,11]

As pregnant women's sleep quality decreases, the level of effect of daily activities on them increases. There is a relationship between sleep disturbance of pregnant women with general fatigue and the influence of daily activities on their lives.[12] In other words, as sleep disorder increases, fatigue and the effects of daily activities on their lives increase, and it is reported that there is a positive relationship between daily dysfunction and fatigue levels of pregnant women.[12-14]

In the literature, there is no study examining the relationship between pregnant women's urinary incontinence status and their fatigue level and sleep quality. For this reason, it is thought that the present study will contribute to the nursing and midwifery literature. Nurses and midwives need to define the presence of urinary incontinence, fatigue, and sleep quality, determine the relationship between them, and

plan care practices in order to increase the quality of care in pregnant women. The aim of this study was to examine the relationship between urinary incontinence experienced during pregnancy with fatigue level and sleep quality. In line with this purpose, the research questions were: "Is there a relationship between urinary incontinence and sleep quality during pregnancy?" and "Is there a relationship between urinary incontinence and fatigue level during pregnancy?"

Materials and Methods

Study Design

This study was designed as "descriptive and cross-sectional". The study was conducted in the pregnancy outpatient clinic of a maternity and pediatric hospital in Konya city center. Data were collected between January and March 2020. The pregnant women were informed about the study and verbal consents were obtained from those who agreed to participate in the study. They filled the data collection forms in 10-15 minutes. Data were collected in privacy in a private room. The room in which the data was collected was warm and bright, and nobody other than the researcher and the participant was allowed to enter the room.

Sampling

Pregnant women who were presented to the pregnancy outpatient clinic of the hospital and met the research criteria were the universe of the study. In the literature, pregnancy urinary incontinence ranges between 18.90% and 72.20%, [2,6,7] and it is reported as 27% in a study conducted in Turkey.[15] When calculating the sample size with the G * Power 3.1.9.4 program, the prevalence of the study conducted by Kocaöz et al. (2010) was taken into account, and the sample size was calculated as 287 pregnant women with a known prevalence of 27%, a margin of error of 5%, and power of 95%.[16] We aimed to reach 315 people by taking 28 more pregnant women, 10% more than the sample calculated considering the possible loss of cases. We recruited 315 pregnant women, but data belonging to 311 women were included in statistical analyses because 4 women submitted incomplete/incorrect data collection forms.

Inclusion criteria

- Being literate,
- Being in an age range of 18-49 years,
- Being singleton pregnant,
- Being able to communicate (no mental problems, no visual/hearing impairment)

Exclusion criteria

- Being pregnant as a result of infertility treatment,
- Being a urinary tract infection,
- Having a chronic disease (hypertension, diabetes, acute complications requiring monitoring or follow-up).

Measurements

The data were collected using a Personal Information Form, which was created based on a literature review, [17-19] the Incontinence Severity Index (ISI), the Pittsburgh Sleep Quality Index (PSQI), and the Fatigue Severity Scale (FSS).

Personal Information Form

The personal information form includes 28 questions evaluating the socio-demographic and obstetric characteristics of the pregnant women, such as age, spouse's age, family type, income status (17 items), and urinary incontinence status (11 items).

Incontinence Severity Index (ISI)

ISI is a universally accepted, easy-to-apply, short, and simple index developed by Sandwik et al. (1993).[20] Its Turkish validity and reliability study was carried out by Hazar and Şirin (2008). The scale consists of 2 items: frequency and severity. A score is obtained by multiplying frequency (how often do you lose urine?) and severity (how much urine do you lose each time?). In this way, the following classifications are achieved: 1-2 points “mild incontinence”, 3-6 points “moderate incontinence”, 8-9 points “severe incontinence”, and 10-12 points “very severe incontinence”. In the internal consistency analysis performed to determine the reliability of the ISI, the Cronbach alpha reliability coefficient was found to be 0.67.[21] In this study, the Cronbach alpha reliability coefficient was calculated as 0.83.

Pittsburgh Sleep Quality Index (PSQI)

The PSQI was developed by Buysse et al.[22] and its Turkish validity and reliability were verified by Agargun et al.[23] The PSQI provides information on sleep quality and the type and severity of sleep disturbances that occurred in the previous month. Eighteen questions are scored on the scale, which consists of 24 questions in total. The scale includes 7 sub-dimensions that provide information about the individual's Subjective Sleep Quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disturbances, Use of Sleep Medication,

and Daytime Drowsiness. Each sub-dimension is evaluated on a score of 0-3 (0 = no distress - 3 = serious distress). The scores obtained from all subdimensions give the total score of the scale (min-max = 0-21). A total score greater than 5 indicates "poor sleep quality". In the Turkish validity and reliability study of the scale, the Cronbach alpha reliability coefficient was reported as 0.80.[23] In this study, the Cronbach alpha reliability coefficient was calculated as 0.83.

Fatigue Severity Scale (FSS)

The FSS was developed by Krupp et al. (1989).[24] The Turkish validity and reliability of the scale were established by Armutlu et al. (2007). The scale examines the fatigue status in the previous month including the day it was filled in. Each item is scored between 1 and 7 (1 = strongly disagree, 7 = totally agree). It consists of nine items that patients self-report, and the total score is calculated by taking the average of nine items. The cut-off value for pathological fatigue was set at 4 and above. Lower total scores indicate less fatigue.[25] In the Turkish validity and reliability study of the scale, the Cronbach alpha reliability coefficient was reported as 0.94.[25] In this study, the Cronbach alpha reliability coefficient was calculated as 0.93.

Statistical Analysis

SPSS 20.0 was used for the analysis of the statistical data. In our sample distribution, whose Skewness and Kurtosis values varied between -1.5 and +1.5, descriptive statistics (percentage, mean and standard deviation, median) as well as the Student's t-test and Pearson correlation analysis, as parametric tests, were used. Correlation coefficients were interpreted as: 0.01-0.29 = low level relationship, 0.30-0.70 = moderate relationship, 0.71-0.99 = high level relationship, and 1.00 = perfect relationship. The independent variables of the study were socio-demographic, obstetric, and urinary incontinence characteristics of the pregnant women. Dependent variables were fatigue and sleep levels of the pregnant women.

Results

The average age of the pregnant women participating in our study was 27.25 ± 5.5.64 years, and the mean week of gestation was 29.46 ± 9.58. We found that 83.30% of the pregnant women's pregnancy was planned (Table 1). We found that 28.00% of the pregnant women stated that they had urinary incontinence before reaching the toilet, 47.30% stated that they had urine incontinence in situations such as laughing, coughing, and sneezing, 15.80% stated that they used incontinence pads, and 5.80% stated that they restricted their fluid intake due to urinary incontinence (Table 2).

Table 1. Socio-demographic and obstetric characteristics of the pregnant women (n=311)

	Mean±SD	
Age (year)	27.25±5.64	
Spouse's age (year)	30.95±6.22	
Duration of marriage (year)	6.06±5.13	
Gestation week	29.46±9.58	
Number of pregnancies	2.33±1.33	
Number of living children	0.95±1.01	
Socio-demographic and obstetric characteristics	**n**	**%**
Education status		
Literate/Primary school	134	43.00
High school	114	36.70
University or higher	63	20.30
Spouse's age		
Literate/Primary school	147	47.30
High school	95	30.50
University or higher	69	22.20
Employment status		
Employed	59	19.00
Unemployed	252	81.00
Family type		
Nucleus	259	83.30
Extended	52	16.70
Perception of income level		
Good	67	21.50
Moderate	234	75.20
Poor	10	3.20
Place of residence		
Village/District	145	46.60
City center	166	53.40
Harmony with the spouse		
Good	216	69.50
Moderate	95	30.50
Abortion/curettage history		
Yes	90	28.90
No	221	71.10
Wanted pregnancy		
Yes	277	89.10
No	34	10.90
Planned pregnancy		
Yes	259	83.30
No	52	16.70
Health problems during pregnancy		
Yes (such as nausea-vomiting, pain)	64	20.60
No	247	79.40
Total	311	100.00

[a] None of the pregnant women answered "bad"

Table 2. Urinary incontinence characteristics of pregnant women (n=311)

Urinary incontinence characteristics	n	%
Rushing to the toilet to urinate		
Yes	183	58.80
No	128	41.20
Urinary incontinence before reaching the toilet		
Yes	87	28.00
No	224	72.00
Incontinence due to laughing, coughing, sneezing, etc.		
Yes	147	47.30
No	164	52.70
Feeling of the full bladder after urination		
Yes	145	46.60
No	166	53.40
It takes too long to urinate		
Yes	76	24.40
No	235	75.60
Feeling of wetness in undergarment without the feeling of a full bladder		
Yes	103	33.10
No	208	66.90
Going to toilet without the urge to urinate		
Yes	72	23.20
No	239	76.80
Use of daily pads due to incontinence		
Yes	49	15.80
No	262	84.20
Limitation of daily activities due to incontinence		
Yes	19	6.10
No	292	93.90
Limitation of liquid intake due to incontinence		
Yes	18	5.80
No	293	94.20
Incontinence during sleep		
Yes	39	12.50
No	272	87.50
Total	311	100.00

The mean ISI score of the pregnant women was 1.81 ± 2.51, the mean PSQI score was 6.01 ± 2.61, and the mean FSS score was 3.70 ± 1.83. According to the ISI, 38.90% of the pregnant women had no urinary incontinence complaints, while 34.10% had "mild", 22.50% had "moderate", 2.60% had "severe", and 1.90% had "very severe" incontinence issues. According to the PSQI, 68.80% of the pregnant women had "poor" sleep quality, and according to the FSS, 46.60% of the pregnant women felt "fatigued" (Table 3).

There was a statistically significant difference between the average PSQI score and the following parameters: pregnant women not rushing to reach the toilet to urinate (p = 0.009), urinary incontinence before reaching the toilet (p = 0.011), incontinence due to laughing, coughing, sneezing, etc. (p = 0.008), feeling of fullness of the bladder after urinating (p <0.001), wet feeling in underwear without feeling full bladder (p = 0.001), and the state of going to the toilet without an urge to urinate (p = 0.001). A statistically significant difference was found between the mean FSS score and the feeling of wetness in underwear (p = 0.001) and the complaint of urinary incontinence during sleep (p <0.001) (Table 4).

In our study, while there was a significant, positive, low-level (r = 0.209; p <0.001) relationship between ISI and PSQI mean scores of the pregnant women, no significant correlation was found between the ISI and the FSS (p = 0.184). A significant, positive, moderate (r = 0.329; p <0.001) correlation was found between FSS and PSQI mean scores (Table 5).

Table 3. Urinary incontinence, sleep, and fatigue levels of the pregnant women (n=311)

	Mean±SD	**Minimum**	**Maximum**
ISI	1.81±2.515	0	12
PSQI	6.01±2.61	1	16
FSS	3.70±1.83	0	7
ISI Incontinence Levels		**n**	**%**
None (0) Mild (1-2) Moderate (3-6) Severe (8-9) Very Severe (10-12)		121 106 70 8 6	38.90 34.10 22.50 2.60 1.90
Total		311	100.00
PSQI Sleep Quality Levels		**n**	**%**
Good Sleep Quality Poor Sleep Quality		97 214	31.20 68.80
Total		311	100.00
FSS Fatigue Level		**n**	**%**
No Yes		166 145	53.40 46.60
Total		311	100.00

ISI: Incontinence Severity Index, PSQI: Pittsburgh Sleep Quality Index, FSS: Fatigue Severity Index

Table 4. Comparison of urinary incontinence characteristics of the pregnant women with their PSQI and FSS mean scores (n=311)

Urinary Incontinence Characteristics	PSQI Mean±SD	Analysis	FSS Mean±SD	Analysis
Rushing to the toilet to urinate				
Yes	6.33±2.54	t=2.620	3.80±1.73	t=1.142
No	5.55±2.64	**p=0.009**	3.56±1.96	p=0.254
Urinary incontinence before reaching the toilet				
Yes	6.61±2.89	t=2.559	3.87±1.83	t=0.964
No	5.77±2.26	**p=0.011**	3.64±1.83	p=0.336
Incontinence due to laughing, coughing, sneezing, etc.				
Yes	6.42±2.76	t=2.682	3.59±1.81	t=-1.087
No	5.63±2.41	**p=0.008**	3.81±1.85	p=0.278
Feeling of the full bladder after urination				
Yes	6.57±2.62	t=3.596	3.79±1.84	t=0.787
No	5.52±2.50	**p<0.001**	3.63±1.82	p=0.432
It takes too long to urinate				
Yes	6.36±2.76	t=1.341	3.35±1.83	t=-1.945
No	5.89±2.55	p=0.181	3.82±1.82	p=0.053
Feeling of wetness in undergarment without the feeling of a full bladder				
Yes	6.68±2.74	t=3.248	4.03±1.80	t=2.244
No	5.67±2.48	**p=0.001**	3.54±1.83	**p=0.026**
Going to the toilet without the urge to urinate				
Yes	6.86±2.98	t=3.215	3.89±1.75	t=0.984
No	5.75±2.43	**p=0.001**	3.65±1.86	p=0.326
Use of daily pads due to incontinence				
Yes	6.18±2.84	t=0.517	4.05±1.77	t=1.433
No	5.97±2.56	p=0.606	3.64±1.84	p=0.153
Limitation of daily activities due to incontinence				
Yes	7.11±2.92	t=1.901	3.81±1.88	t=0.266
No	5.93±2.57	p=0.058	3.70±1.83	p=0.790
Limitation of liquid intake due to incontinence				
Yes	6.39±3.013	t=0.640	4.22±1.68	t=1.235
No	5.98±2.58	p=0.523	3.67±1.84	p=0.218
Incontinence during sleep				
Yes	6.08±2.25	t=0.180	2.21±1.31	t=-5.723
No	6.00±2.66	p=0.857	3.92±1.80	**p<0.001**

SD: Standard Deviation, t= Independent sample t-test.

Table 5. The relation between pregnant women's urinary continence, sleep, and fatigue levels (n=311)

		PSQI	FSS
ISI	**r**	0.209	0.075
	p*	**<0.001**	0.184
PSQI	**r**	-	0.329
	p*	**-**	**<0.001**

*Pearson correlation analysis, ISI: Incontinence Severity Index, PSQI: Pittsburgh Sleep Quality Index, FSS: Fatigue Severity Scale.

Discussion

The aim of our study was to investigate the relationship between urinary incontinence and fatigue level and sleep quality during pregnancy. When evaluated in line with our aim, as the level of incontinence increased in pregnant women, poor sleep quality increased. The presence of urinary incontinence during pregnancy causes pregnant women to have poor sleep quality. Frequent urge for voiding due to urinary incontinence complaints and the interruption of day and night sleep may affect the sleep quality of pregnant women. Therefore, nurses and midwives need to cope with sleep problems during pregnancy. Nurses and midwives should explain the effects of qualified and restful sleep on pregnancy and determine the factors that impair sleep quality. Besides, pregnant women should be informed that fluid intake should be restricted at least two hours before bedtime and that they should go to the toilet before going to bed.

Anatomical and physiological changes during pregnancy cause a deterioration in the pelvic structure, and it is stated in studies that the prevalence of urinary incontinence increases during this period.[15,17,26] In our study, 62.10% of the pregnant women had mild to very severe urinary incontinence. In the literature, the frequency of urinary incontinence in pregnant women varies between 16% and 60%.[15,17,26] In our study, poor sleep quality was found in approximately one out of ten pregnant women. Studies conducted in Turkey[13,18,19] and around the world[27,28] support the outcome that pregnant women have poor sleep quality. Sleep problems during pregnancy are serious. Coping with sleep problems is important for improving maternal and fetal health.[10] Women's health nurses and midwives should definitely evaluate pregnant women's sleep quality as part of the antenatal care services.

In our study, the mean FSS score of the pregnant women with complaints of a feeling of wetness in underwear without feeling that the bladder is full and urinary incontinence during sleep was significantly higher than those without these complaints. In our study, as the fatigue level of the pregnant women increases, their sleep quality level decreases, but no relationship was found between the severity of urinary

incontinence and the severity of fatigue. Since the complaint of urinary incontinence during sleep causes an interruption in the sleep of pregnant women, it may cause inadequate rest and increased fatigue levels. Our study results also support this outcome. In addition, the feeling of wetness in underwear can cause pregnant women to change underwear frequently and increase their fatigue levels by causing physical and psychological discomfort. Çoban and Yanıkkerem (2010) found that sleep disorders in pregnant women increase their fatigue levels and negatively affect their daily work.[12] It is important for pregnant women to cope with urinary incontinence complaints in order to increase their sleep quality and reduce their fatigue levels.

In our study, fatigue was found in approximately half of the pregnant women. Depending on the questionnaires used in studies and the countries in which those studies have been conducted, very different fatigue rates during pregnancy have been reported. Mortazavi and Brozoee (2019) reported a mean fatigue rate of 93% in pregnant women,[29] and Yehia et al. (2020) stated that 67.40% of the pregnant women experienced fatigue.[30] Physiological and psychological changes during pregnancy cause some undesirable symptoms, and fatigue and sleep are the leading symptoms.[12,15] Therefore, factors that cause sleep problems and fatigue in pregnant women should be evaluated during prenatal visits. Urinary incontinence, which is our present subject, should not be overlooked as mentioned above.

In our study, the frequency of urinary incontinence, poor sleep quality, and fatigue in pregnant women was found to be high. As the severity of urinary incontinence increases in pregnant women, poor sleep quality increases. In addition, the lower the level of sleep quality, the higher the level of fatigue. According to these results, we can say that the complaint of urinary incontinence in pregnant women negatively affects their sleep quality, and sleep quality decreases and fatigue increases together. Family practitioners, nurses, and midwives should definitely evaluate urinary incontinence, sleep problems, and fatigue levels of pregnant women during prenatal follow-up. Pelvic floor muscle exercises should be taught to pregnant women with urinary incontinence complaints to enable them to prevent these complaints or cope with them. Pregnant women with persisting complaints should be referred to a urologist. The sleep habits of pregnant women should be examined, the factors that cause sleep problems should be determined, and necessary care practices should be made to enable them to cope with these problems.

Limitations

Study findings are limited to the sample group and cannot be generalized to the general public. Since the data are based on self-report, the severity of urinary incontinence, sleep quality, and fatigue levels of the pregnant women are subjective data. Another limitation is that illiterate pregnant women were not included in the study.

Ethical Considerations

Before the study, permission was obtained from the ethics committee (Date; 2019 / Decision No; 14632) and also from the hospital where the study was conducted (Date; 12.01.2020 / Decision No; 86737044-806.01.03). All pregnant women participating in the study were informed about the study and their consent was obtained.

Conflict of Interest

The authors declare that there is no conflict of interest. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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