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Factors Associated with Sleep Hygiene, Sleep Quality and Sleepiness in Pregnant Women

Gebelerde Uyku Hijyeni, Uyku Kalitesi ve Uykululuk ile İlişkili Faktörler

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ABSTRACT

Objective: This study aimed to identify socio-demographic, obstetric, and lifestyle-related factors affecting sleep hygiene, sleep quality, and sleepiness in pregnant women.

Methods: This cross-sectional study recruited 580 pregnant women. Data were collected with a descriptive data form, the Pittsburgh Sleep Quality Index, Epworth Sleepiness Scale, and Sleep Hygiene Index (SHI). Statistical analyses were conducted using chi-square test, independent group t-test, Kruskal-Wallis test analysis of variance, and logistic regression analysis.

Results: The prevalence of poor sleep quality in the participants was 62.9%, the prevalence of increased daytime sleepiness was 6.9%, and the mean SHI score was 11.03±6.39. Daytime sleepiness prevalence was significantly higher (p=0.034) among the participants who reported checking social media 30 minutes before going to sleep at night. Sleep quality decreased significantly (p=0.024) over the trimesters. Daytime sleepiness prevalence was significantly higher for participants experiencing their first or second pregnancy and during the second trimester (p<0.05). Participants who had previously given birth once had significantly higher sleep hygiene scores than those who had never given birth and those who had given birth at least twice before (p=0.029). In pregnant women who had never given birth, daytime sleepiness was 4.45 times [confidence interval (CI) 95% 1.50-13.22] higher in the univariate analysis and 4.85 times (CI 95% 1.41-16.72) higher in the multivariate analysis compared to pregnant women who had given birth at least twice before. Finally, the univariate analysis showed that sleep quality was 0.64 times (CI 95% 0.44-0.92) better during the second than the third trimester (p=0.017).

Conclusion: For pregnant women, quality of sleep deteriorates through the trimesters. Pregnant women who use social media before sleep are more likely to experience excessive daytime sleepiness.

Keywords: Sleep hygiene, sleep quality, sleepiness

ÖZ

Amaç: Çalışmada, gebelerde uyku kalitesi, uykululuk ve uyku hijyenini etkileyen sosyo-demografik, obstetrik ve bazı yaşam tarzı ile ilişkili faktörlerin belirlenmesi amaçlanmıştır.

Yöntem: Kesitsel olarak planlanan bu çalışmaya, 580 gebe katılmıştır. Araştırmanın verileri, tanımlayıcı veri formu, Pittsburgh Uyku Kalitesi İndeksi, Epworth Uykululuk Ölçeği ve Uyku Hijyen İndeksi ile toplandı. İstatistiksel analizi, tanımlayıcı istatistikler, ki-kare testi, bağımsız gruplarda t testi, Kruskal-Wallis varyans analizi, lojistik regresyon analizi ile değerlendirildi.

Bulgular: Gebelerde kötü uyku kalitesi prevalansı %62,9 artmış gün içi uykululuk sıklığı %6,9 ve Uyku Hijyeni İndeksi puan ortalaması, 11,03±6,39'dur. Geceleri uyumadan 30 dakika önce sosyal medyayı kontrol eden gebelerde, artmış gün içi uykululuk anlamlı olarak daha yüksektir (p=0,034). Trimester arttıkça gebelerin uyku kalitesinin kötü olduğu ve istatistiksel olarak anlamlı olduğu saptandı (p=0,024). Katılımcıların artmış gün içi uykululuk nullipara gebelere göre ve primaparlarda ve ikinci trimesterdeki gebelerde anlamlı olarak daha fazla olduğu saptandı (p<0,05). Uyku hijyen puan ortalaması

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primipara gebelerde anlamlı olarak daha yüksektir (p=0,029). Hiç doğum yapmayan gebelerde, doğum sayısı 2 ve üzeri olan gebelere göre tek değişkenli analizde artmış gün içi uykululuk 4,45 kat [güven aralığı (GA) %95 1,50-13,22), çok değişkenli analizde ise 4,85 kat (GA %95 1,41-16,72) fazladır. Ayrıca ikinci trimesterdeki gebelerde, üçüncü trimesterdeki gebelere göre, tek değişkenli analizde uyku kalitesinin 0,64 kat (GA %95 0,44-0,92) daha iyi olduğu saptandı (p=0.017).

Sonuç: Gebelerde trimester ilerledikçe uyku kalitesi kötüleşmektedir. Uyku öncesi sosyal medya kullanan gebelerde, gün içi artmış uykululuk daha fazladır.

Anahtar kelimeler: Uyku hijyeni, uyku kalitesi, uyku hali

INTRODUCTION

During pregnancy, sleep and wakefulness rhythms change due to anatomical, physiological, psychological, and hormonal changes, resulting in frequent sleep-related problems such as insufficient sleep duration and poor sleep quality [1-3]. The most common sleep disorders in pregnant women are insomnia, obstructive sleep apnea, and restless legs syndrome [2]. Sleep problems during pregnancy also vary according to trimester. For example, Sedov et al. [1] concluded from a meta-analysis that the prevalence of sleep disorders in the first, second, and third trimester was 54.3%, 49.3%, and 69.6%, respectively. Another meta-analysis study conducted in low- and middle-income countries found that sleep quality worsens as gestational age progresses while its frequency varies between 37% and 60% [4]. A third meta-analysis study conducted during the COVID-19 pandemic found that 56% of pregnant women reported sleep problems, although the prevalence fell to 13% after corrections were made in the analyses. The study also showed that the woman's age was the strongest predictor of sleep disorders [5]. Bahani et al. [6] found that sleep disorders among pregnant women also depended on parity, education status, anxiety, depression, and a risky pregnancy history. Their structural equation model determined that obstetric characteristics, psychological factors, and lifestyle directly affected sleep quality.

Good and quality sleep during pregnancy is necessary for both maternal and fetal health. Studies have determined the importance of sleep disorders during pregnancy and their effects on neonatal and maternal outcomes. Regarding the baby, sleep-related respiratory symptoms are positively related to intrapartum fetal risk and likelihood of emergency cesarean deliver [7]. Sleep deprivation in pregnant women is also negatively associated with fetal health, fetal growth, birth weight, premature birth and stillbirth [8]. Regarding maternal health, sleep deprivation increases the risk of gestational hypertension, preeclampsia, gestational diabetes, cesarean delivery, and antenatal and postpartum depression [9-12]. A prospective study determined that low sleep quality is associated with the risk of antepartum suicidal ideation [11]. Sleep disorders in pregnancy also reduce the quality of life and can have long-term effects. Pregnant women can also be affected by their use of technological devices, particularly going to bed late at night, which can cause daytime sleepiness. Smartphone addiction has been shown to reduce sleep quality in pregnant women who give birth prematurely [13].

Given these effects, health professionals need to become more aware of the high prevalence of poor sleep quality in pregnant women and its negative health effects. In order to maintain healthier pregnancies and improve health in Türkiye, it is necessary to determine the prevalence of sleep quality and sleep disorders and identify the affecting factors. Accordingly, the present study aims to determine the socio-demographic, obstetric, and lifestyle factors affecting sleep hygiene, sleep quality, and sleepiness in pregnant women in Türkiye.

MATERIAL AND METHOD

Research Universe and Sample

This cross-sectional study was conducted with pregnant women served by Sakarya Education and Research Hospital. The study's universe consisted of 16,787 pregnant women who applied to the hospital in 2019. The required sample size was calculated using OpenEpi, version 3 [14]. Çelik and Köse [15] found that 28.2% of pregnant women reported poor sleep quality. Accordingly, we aimed initially to recruit at least 519 pregnant women with an expected sleep disorder frequency of 28.2%, an absolute deviation of 1%, and a confidence level of 99%. After including a reserve sample of 10%, we determined a minimum sample size of 570 pregnant women. The study was completed with 580 pregnant women.

The inclusion criteria were defined as healthy communication, literate, and volunteer pregnant women. The exclusion criteria were pregnant women who did not want to participate, under the age of 18, with threatened miscarriage, at risk of premature birth, diagnosed with a high-risk pregnancy and/or psychiatric diseases, and/or communication disabilities.

Data Collection Tools

The data for the study were collected using a descriptive data form, the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), and the Sleep Hygiene Index (SHI).

The descriptive data form included items about the participants' socio-demographic characteristics, pregnancy history, and habits. Socio-demographic items included age, education, occupation, economic status, and spouse's occupation and education. Pregnancy history items included gestational week, pre-pregnancy body mass index, weight gained during pregnancy, whether the pregnancy was planned, previous miscarriage, gravida, parity, and health problems experienced during pregnancy. Items about habits included smoking, social media use, exercise information, and frequency of consuming beverages containing caffeine. Checking social media (Facebook, Instagram, Twitter, etc.) 30 minutes before going to bed at night was coded as rarely, occasionally, and frequently. Daily time spent on social media

was coded as 0-30 min., 31-60 min., 61-120 min., and 121 min. or more. Regular exercise, physical activity done for more than half an hour at least 3 days a week was coded as "No", "Yes". Participants were also asked about the number of hours usually spent exercising or doing sports activities before sleep.

PSQI was developed by Buysse et al. [16] in 1989 for psychiatric practices and clinical research. It evaluates sleep quality in the last month. The validity and reliability of the Turkish version was evaluated by Ağargün et al. [17] in 1996. They reported a Cronbach's alpha reliability coefficient of 0.80. In the present study, the Cronbach's alpha reliability coefficient was 0.73. Of the PSQI's 24 items, 19 are self-report questions while five are answered by the spouse or roommate, are used only for clinical information, and not included in the scoring. The PSQI provides a quantitative measure of sleep quality, a total score below 5 is defined as "good sleep" while a total score of 5 or above is defined as "bad sleep".

The ESS was developed by Johns to measure both the quality and quantity of sleepiness and general level of daytime sleepiness [18]. The scale was adapted to Turkish and assessed for reliability and validity by Ağargün et al. [19], who reported a Cronbach's alpha coefficient of 0.80. In the present study, the coefficient was 0.67. A score of 11 or more indicates excessive daytime sleepiness.

SHI was developed by Mastin et al. [20] to evaluate sleep hygiene by determining the frequency of sleep hygiene behaviors. The scale was adapted to Turkish and tested for validity and reliability by Ozdemir et al. [21], who reported a Cronbach's alpha value of 0.70. The Cronbach's alpha coefficient for the present study was 0.64. The SHI has 13 items that are answered using a five-point Likert type scale (none: 1, always: 5). Hence, total scores can vary between 13 and 65, with higher scores indicating worse sleep hygiene.

Data Collection

Data were collected from pregnant women who applied to the hospital's obstetrics and gynecology clinic and pregnancy information class. Informed consent forms were signed by those who met the inclusion criteria to obtain written consent. The participants completed the descriptive data form and scales under the researcher's supervision. Completion of the questionnaires took approximately 10-15 minutes.

Statistical Analysis

Statistical analysis was performed using the SPSS 20.0. Descriptive statistics were expressed as arithmetic mean, standard deviation, number, and percentage. Independent samples t-tests, chi-square tests, and the Kruskal-Wallis test for independent groups were used to evaluate the relationships between participants' sleep hygiene, sleep quality, and sleepiness scores and their socio-demographic and obstetric characteristics. Logistic regression analysis was performed to identify variables predicting sleep quality and sleepiness. A logistic regression model was created using the Enter method with those variables that were statistically significant in the univariate analysis. A difference was considered significant if the p-value was less than 0.05.

Ethical Considerations

Before conducting the research, official permission was obtained from the Sakarya University Faculty of Medicine Non-Interventional Ethics Committee (approval no.: 445, date: 07.07.2020) and the institution where the application was made. The study was conducted in accordance with the World Medical Association Declaration of Helsinki.

RESULTS

The study included 580 pregnant women with a mean age of 28.30±5.31 years (min.: 18; max.: 45). Regarding education, 33.4% were high school graduates and, likewise, university graduates (33.4%). Regarding socio-economic status, 70.3% reported that their income equaled their expenses. Regarding obstetric status, 58.8% of the pregnant women were in the 3rd trimester, 32.6% were primigravida, 37.8% were primipara, and 26.9% had a history of miscarriage. In addition, 27.1% stated that their pregnancy was not planned, 15.9% were smokers, and 14.8% had a chronic disease.

The prevalence of poor sleep quality was 62.9%, while the prevalence of daytime sleepiness was 6.9%.

No significant relationships were found between sleep hygiene, sleep quality, and sleepiness scores, or between those and the pregnant women's socio-demographic characteristics. Increased daytime sleepiness was significantly higher in the participants who checked social media 30 min. before going to bed at night (p=0.034) (Table 1).

Table 2 shows the participants' obstetric characteristics and sleep quality. Sleep quality declined significantly across the trimesters (p=0.024). More specifically, daytime sleepiness was significantly higher in nullipara and 2nd trimester pregnant women (p<0.05). The mean sleep hygiene score was significantly higher in primipara participants than in those who had never given birth or had given birth at least twice (p=0.029).

Table 3 presents the crude odds ratio values from univariate and multivariate analyses, as well as the adjusted odds ratio values adjusted for age and education. These show a statistically significant relationship between the pregnant women's sleepiness and sleep quality, and socio-demographic and obstetric variables. More specifically, daytime sleepiness was 2.30 times higher [confidence interval (CI) 95% 1.16-4.56] for participants in the second trimester compared to those in the third (p=0.016). However, no significant relationship was found in the multivariate analysis (p=0.127). In addition, sleepiness was 1.99 times (CI 95% 1.04-3.82) more (p=0.037) higher in pregnant women who used social media 30 minutes before going to bed at night compared to those who did not. However, no significant relationship was found in the multivariate analysis (p=0.111). Comparing nulliparous pregnant women with pregnant women with 2 or more births, increased daytime sleepiness was 4.45 times (95% CI 1.50-13.22) higher in the univariate analysis and 4.85 times (95% CI 1.41-16.72) higher in the multivariate analysis. Finally, sleep quality was 0.64 times (95% CI 0.44-0.92) better among pregnant women in the second trimester compared to pregnant women in the third trimester in the univariate analysis (p=0.017).

Table 1. Relationship Between Sleep Hygiene, Sleep Quality, and Sleepiness Based on the Socio-demographic Characteristics of Pregnant Women (n=580)								
	Sleep quality		p-value	Daytime sleepiness		p-value	Sleep hygiene	p-value
	Good 5≥	Bad 5<		Normal <11	High 11≥		Mean ± SD	
	n (%)	n (%)		n (%)	n (%)			
Age								
≤29	135 (37.5)	225 (625)	0.783	330 (91.7)	30 (8.3)	0.081	11.63±7.03	0.110
30≥	80 (36.4)	140 (63.6)		210 (95.5)	10 (4.5)		10.75±5.14	
Educational status								
Primary school	74 (39.2)	115 (60.8)	0.470	175 (92.6)	14 (7.4)	0.736	11.55±5.81	0.504
Secondary and high school	141 (36.1)	250 (63.9)		365 (93.4)	26 (6.6)		11.17±6.66	
Pre-pregnancy BMI								
Normal	126 (38.7)	200 (61.3)		302 (92.6)	24 (7.4)		11.12±6.67	
25 or above	89 (35.0)	165 (65.0)	0.372	238 (93.7)	16 (6.3)	0.616	11.52±6.02	0.452
Economic status								
Low	38 (41.3)	54 (58.7)		88 (95.7)	4 (4.3)		11.72±5.88	
Middle	142 (34.8)	266 (65.2)	0.209	378 (92.6)	30 (7.4)	0.575	11.48±6.54	0.98
High	35 (43.8)	45 (56.2)		74 (92.5)	6 (7.5)		9.88±6.05	
Smoking								
No	183 (37.5)	305 (62.5)	0.621	454 (93.0)	34 (7.0)		11.39±6.55	
Yes	32 (34.8)	60 (65.2)		86 (93.5)	6 (6.5)	0.877	10.80±5.45	0.418
History of chronic disease								
Yes	29 (33.7)	57 (66.3)	0.486	81 (94.2)	5 (5.8)	0.668	11.22±6.46	0.497
No	186 (37.7)	308 (62.3)		459 (92.9)	35 (7.1)		11.73±5.97	
Checking social media 30 minutes before going to bed at night								
No	156 (38.5)	249 (61.5)	0.272	383 (94.6)	22 (5.4)	**0.034**	11.01±6.15	0.094
Yes	59 (33.7)	116 (66.3)		157 (89.7)	18 (10.8)		11.97±6.89	
Time spent on social media in a day								
0-60 min.	133 (39.8)	201(60.2)		317 (94.9)	17 (5.1)		11.35±6.53	
61-120 min.	54 (33.8)	106 (66.2)	0.274	147 (91.9)	13 (8.1)	0.079	11.15±6.42	0.833*
121 min. and more	28 (32.6)	58 (67.4)		76 (88.4)	10 (11.6)		11.33±5.82	
Do not exercise regularly								
No	145 (35.4)	265 (64.6)	0.187	383 (93.4)	27 (6.6)	0.646	11.50±6.03	0.242
Yes	70 (41.2)	100 (58.8)		157 (92.4)	13 (7.6)		10.81±7.17	

*Kruskal-Wallis Test, Bonferroni corrections, SD: Standard deviation, BMI: Body mass index

Table 2. Relationship Between Sleep Hygiene, Sleep Quality, and Sleepiness According to Obstetric Characteristics of Pregnant Women (n=580)

	Sleep quality		p-value	Sleepiness		p-value	Sleep hygiene	p-value
	Good 5≥	Bad 5<		Normal 10<	High 10≥		Mean ± SD	
	n (%)	n (%)		n (%)	n (%)			
1st trimester	20 (46.5)	23 (53.5)		39 (90.7)	4 (9.3)		11.51±6.28	
2nd trimester	84 (42.9)	112 (57.1)	0.024	176 (89.8)	20 (10.2)	**0.043**	11.06±7.07	0.311*
3rd trimester	111 (32.6)	230 (67.4)		325 (95.3)	16 (4.7)		11.40±5.99	
Gravida								
Nullugravida	78 (41.3)	111 (58.7)	0.145	173 (91.5)	16 (8.5)	0.300	11.02±6.95	0.415
Primagrivida	137 (35.0)	254 (65.0)		367 (93.9)	24 (6.1)		11.49±6.11	
Parite								
Nullipara	84 (40.6)	123 (59.4)		185 (89.4)	22 (10.6)		10.47±6.39	
Primipara	79 (36.1)	140 (63.9)	0.385	205 (93.6)	14 (6.4)	**0.011**	11.89±6.78	**0.029**
Multipara	52 (33.8)	102 (66.2)		150 (97.4)	4 (2.6)		11.55±5.69	
Previous abortion								
Yes	58 (37.2)	98 (62.8)		146 (93.6)	10 (6.4)	0.774	10.85±5.90	0.296
No	157 (37.1)	266 (62.9)	0.989	393 (92.9)	30 (7.1)		11.45±6.57	
Having health problems during the current pregnancy								
Yes	44 (38.6)	70 (61.4)	0.706	104 (91.2)	30 (6.4)	0.378	11.45±6.62	0.771
No	171 (36.7)	295 (63.3)		436 (93.6)	10 (8.8)		11.26±6.34	
Planned pregnancy								
Yes	160 (37.8)	263 (62.2)	0.536	390 (92.2)	33 (7.8)	0.158	11.30±6.61	0.999
No	55 (35.0)	102 (65.0)		150 (95.5)	7 (4.5)		11.29±5.77	

*Kruskal-Wallis Test, Bonferroni Corrections, SD: Standard deviation

Table 3. Univariate Analysis and Multivariate Regression Analysis of Factors Associated with Sleep in Pregnant Women

	Sleepiness						Sleep quality					
	Univariate analysis			Multivariate analysis			Univariate analysis			Multivariate analysis		
	cOR	CI 95%	p-value	aOR	CI 95%	p-value	cOR	CI 95%	p-value	aOR	CI 95%	p-value
Trimester												
1st trimester	2.08	0.66-6.54	0.209	2.24	0.69-7.21	0.175	0.55	**0.29-1.05**	**0.072**	**1.21**	**0.62-2.36**	**0.57**
2nd trimester	2.30	1.16-4.56	**0.016**	1.75	0.85-3.61	**0.127**	0.64	0.44-0.92	**0.017**	**1.84**	**0.96-3.50**	**0.06**
3rd trimester	1			1			1					
Checking social media 30 minutes before going to bed at night												
No	1			1								
Yes	1.99	1.04-**3.82**	0.037	1.75	0.87-3.49	0.111						
Parite												
0	4.45	1.50-13.22	0.007	4.85	1.41-16.72	0.012						
1	2.56	0.82-7.93	0.103	2.89	0.87-9.62	0.083						
2+	1			1								

cOR: Crude odds ratio, aOR: Adjusted odds ratios, CI: Confidence interval
a: Correction for age and education

DISCUSSION

The study was conducted to identify the factors affecting sleep hygiene, sleep quality, and daytime sleepiness among pregnant women in Türkiye. The main findings were that sleep quality worsened across trimesters and was associated with parity. There were no statistically significant relationships with socio-demographic factors. Regarding habits, excessive daytime sleepiness was more common in pregnant women who used social media before sleep.

Sleep quality can be assessed using both subjective and objective measurements. Scales commonly used in both clinical practice and research include the ESS, PSQI, Insomnia Severity Index, International Restless Legs Syndrome Rating Scale, and the Global Sleep Assessment Questionnaire.

The prevalence of poor sleep quality in the present study was 62.9%. No associations were found between poor sleep quality and socio-demographic characteristics, lifestyle, or obstetric variables. Sleep quality worsened across the trimesters, with 53.5%, 57.1%, and 67.4% of participants reporting poor sleep quality in the 1st, 2nd, and 3rd trimester, respectively. Similarly, from their meta-analysis, Mislu et al. [4] reported poor sleep quality frequencies of 37.4%, 47.6%, and 60.1%, respectively.

In the present study, there was no significant association between sleep quality in the 3rd and 1st trimester. The univariate analysis showed that sleep quality was significantly better in 2nd trimester compared to the 3rd trimester, although no significant association was found in the multivariate analysis. Kiyoko et al. [22] also found no relationship between the trimesters regarding sleep quality, although it was worse in the 3rd trimester. They also found that back pain and leg cramps significantly affect sleep efficiency in the 3rd trimester, while health-related impairments to quality of life include severe physical pain, poor physical function, and inadequate sleep [22]. Christian et al. [23] argue that individual differences should be emphasized in evaluating perinatal sleep health.

While sleepiness was not associated with the number of pregnancies in our study, it was associated with parity. In contrast, Robertson et al. [7] found no association between parity and sleepiness. From a clinical perspective, the ESS is easy to administer and acceptable to pregnant women. However, there is controversy about the benefits of objective and self-reported methods in assessing sleep disorder symptoms in pregnancy [7].

Using smartphones before going to bed and exposure to low-intensity blue light can seriously affect sleep quality and circadian rhythms [24]. We found that excessive daytime sleepiness was higher in pregnant women who reported checking social media 30 min. before going to bed, whereas there was no relationship between time spent on social media during the day and sleep disorders. However, we did not ask at what times the pregnant women actively used social media. In adults and university students, social media use in bed before sleep is associated with insomnia and shorter sleep duration [25]. In young adults, sleep disorders are more common in adults who use social media more during the day than in adults who use it less [13].

Study Limitations

A key limitation of this study is its cross-sectional design. Because data on sleep, socio-demographic, and lifestyle factors were collected at a single point in time, the study can only identify associations between these factors (e.g., social media use and daytime sleepiness) but cannot establish a definitive cause-and-effect relationship. For example, it is unclear whether using social media before bed causes increased daytime sleepiness, or if pregnant women who are already experiencing poor sleep and high sleepiness are more likely to use social media late at night. Future longitudinal studies that track participants over the course of their pregnancy would be necessary to better determine the temporal and causal relationships between these variables.

CONCLUSION

In conclusion, the present study's findings indicate that sleep quality for pregnant women worsens across the trimesters. In addition, pregnant women who use social media before sleep have higher levels of daytime sleepiness.

Among the strengths of this study is that we included pregnant women in all trimesters and used three scales to assess sleep disorders. Sleep quality can be improved and adverse outcomes in pregnancy reduced through various strategies. These include ensuring quality sleep hygiene, practicing relaxation techniques before going to bed, providing a comfortable sleep environment, and seeking medical advice for sleep disorders.

Ethics

Ethics Committee Approval: The study was obtained from the Sakarya University Faculty of Medicine Non-Interventional Ethics Committee (approval no.: 445, date: 07.07.2020) and the institution where the application was made. The study was conducted in accordance with the World Medical Association Declaration of Helsinki.

Informed Consent: Informed consent forms were signed by those who met the inclusion criteria to obtain written consent.

Footnotes

Author Contributions

Surgical and Medical Practices: DSG, SY; Concept: DSG, SY; Design: DSG, SY; Data Collection or Processing: DSG, SY; Analysis or Interpretation: DSG, SY; Literature Search: DSG, SY; Writing: DSG, SY.

Conflict of Interest: No conflict of interest was declared by the authors.

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