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Comparison of Coronavirus Anxiety, Sleep Quality and Quality of Life in Pregnant Women with Healthy Controls

Gebelerde Koronavirüs Anksiyetesi, Uyku Kalitesi ve Yaşam Kalitesinin Sağlıklı Kontrollerle Karşılaştırılması

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ABSTRACT

Objective: In the pandemic, pregnant women are at the forefront of the disadvantaged groups and need special needs related to more mental problems. This study aims to evaluate the pandemic anxiety of pregnant women and how their sleep and quality of life are affected.

Materials and Methods: 200 pregnant and 200 control patients were included in the study. Informed consent was obtained from the participants. They were asked to fill out the sociodemographic data form, The Coronavirus Anxiety Scale (CAS), the Pittsburgh sleep quality index (PSQI), and the 12-Item Short Form Survey (SF-12) Quality of Life scale.

Results: No statistically significant difference was found in the CAS between pregnant and healthy controls (p=0.093). While the physical score subscale of the SF-12 Quality of Life Scale (SF12-PCS) scored statistically significantly higher in pregnant women compared to the healthy controls, the mental score subscale (SF12-MCS) scored significantly lower (respectively: p<0.001; p=0.009).

A statistically weak correlation was found between coronavirus anxiety and sleep quality (r:0.222; p=0.002).

Conclusion: The pandemic process affects pregnant women's sleep quality and mental quality of life terribly. Clinicians should take care to evaluate the sleep quality of pregnant women in this process.

Keywords: Anxiety, coronavirus, pregnancy, quality of life, sleep quality

ÖZ

Amaç: Covid-19 pandemi süreci, insanların büyük çoğunluğunu ruhsal ve fiziksel olarak etkileyen önemli bir toplumsal durumdur. Bu süreçte dezavantajlı olan ve daha fazla düşünülmesi gereken grupların başında gebeler gelmektedir. Bu çalışmanın amacı gebelerin pandemi kaygısını, uyku ve yaşam kalitelerin nasıl etkilendiği değerlendirmektir.

Materyal ve Metot: Çalışmaya 200 gebe ve 200 kontrol hastası dahil edilmiştir. Katılımcıların aydınlatılmış onamları alınmış ve sosyo demografik veri formu, Koronavirüs Anksiyetesi Ölçeği (CAS), Pittsburgh Uyku Kalitesi ölçeği (PSQI), Yaşam Kalitesi Ölçeğin Kısa Form-12 (SF-12) yaşam kalitesi ölçeği doldurmaları istenmiştir.

Bulgular: Gebe ve sağlıklı kontroller arasında Koronavirüs Anksiyetesi Ölçeği puanları arasında istatistiksel olarak anlamlı fark bulunamamıştır (p=0,93). Gebe ve sağlıklı kontroller arasında uyku kalitesi açısından istatistiksel olarak anlamlı fark bulunmuştur (p=0,02). Gebelerde sağlıklı kontrollere göre Yaşam Kalitesi Ölçeğin Kısa Form-12 (SF-12) fiziksel puan alt ölçeği istatistiksel olarak anlamlı daha yüksek puan almışken, mental puan alt ölçeği istatistiksel olarak anlamlı düşük puan almıştır (sırasıyla: p<0,001; p=0,009).

Koronavirüs anksiyetesi ile uyku kalitesindeki bozulma arasında istatistiksel olarak anlamlı pozitif yönde zayıf korelasyon bulunmuştur (r:0,222; p=0,002).

Sonuç: Pandemi süreci gebelerdeki uyku kalitesini ve mental olarak yaşama kalitelerini oldukça kötü yönde etkilenmektedir. Klinisyenler bu süreçte gebelerin uyku kalitelerini değerlendirmeye özen göstermelidirler.

Anahtar Kelimeler: Anksiyete, gebelik, koronavirüs, uyku kalitesi, yaşam kalitesi

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INTRODUCTION

The COVID-19 pandemic has been in our lives for about 1.5 years; unfortunately, we have not been able to remove my halo from our lives altogether. In this process, while the COVID-19 pandemic continues to affect human health in many ways, our information about specific groups (pregnant women, senior population, children, etc.) is still limited. More psychological problems have started to be seen in the covid-19 pandemic process with pregnant women in the particular group.[1-3] The essential psychological symptom in this group is stress.[4] It is thought that the anxiety levels of pregnant women generally increase during the pandemic process, they are more depressed, and they experience more insomnia.[2,5,6] In a meta-analysis evaluating 19 recent studies, the prevalence of anxiety in lactating and pregnant women was 33%, depression 27%, and insomnia 34%.[4] Sleep physiology is highly affected during pregnancy, but most pregnant women reported poor sleep quality during the COVID-19 epidemic.[2] In the studies conducted before the pandemic, pregnant women's sleep and life quality were primarily evaluated in the last trimester. It is emphasised that it is vital to examine pregnant women during this period.[7] No study has been found to evaluate both sleep and quality of life together during the pandemic.

During the COVID-19 pandemic, mental disorders can affect pregnant women's quality of life and the baby's future life to be born.[8,9]

In this study, it was aimed to determine how pregnant women, who are the special group that may be affected during the pandemic period, are affected. It is crucial to take special precautions for pregnant women and closely support their mental health in this process. In this study, anxiety due to the coronavirus pandemic, sleep quality, and quality of life of pregnant women were evaluated during pregnancy. Their relations with each other during the pandemic period were examined.

MATERIALS AND METHODS

***Ethics Committee Approval*:** Our study was approved by Düzce University Ethics Committee (Date:05/04/2021, decision no:2021/99). The study was carried out in accordance with the International WHO Declaration of Helsinki.

The Type of Study: The type of study is a prospective, descriptive and cross-sectional study. In the power analysis using the G-power program, the total sample size was calculated as 398 people, when the Cohen's d value was taken as 0.25, the relatively weak effect size was accepted as the alpha error value of 0.05 and the power as 0.80.

The study was completed with 200 patients who applied to the pregnant outpatient clinic, and the patients accompanying the hospital in the same period without active complaints were included. The researchers explained the study to the patients, and consent was obtained from the patients who agreed to participate in the research and the control group.

Data Collection Tools

Sociodemographic Form: The form consists of 17 questions such as age, gender, physical and mental illness history, history of COVID-19, etc.

The Coronavirus Anxiety Scale (CAS): The scale created by Lee[10] in 2020 consists of 5 items, and the increase in the score indicates that coronavirus anxiety has also increased. The Turkish validity and reliability study was performed by Evren et al.[11]

Pittsburgh Sleep Quality Index (PSQI): PSQI consists of 24 questions. Nineteen of these questions are filled by the scale owner, and the other five questions are supplied by the person with whom they share their room. PSQI has a sensitivity of 89.6% and a specificity of 86.5% to identify cases with sleep disorders. It has been translated into 48 languages and is widely used in clinical research. The cut-off score of the scale was specified as 5. Scores of 5 and above indicate poor sleep quality. The scale questions seven sub-domains: Subjective Sleep, Sleep Latency, Sleep Duration, Sleep Efficiency, Sleep Disorder, Sleep Medication, and Daytime Dysfunction. The Turkish validity and reliability study was performed by Ağargün et al.[12,13]

12-Item Short Form Survey (SF-12): It is a scale developed by Ware et al.[14] in 1996 from the SF-36 form. The scale consists of 12 questions, resulting in two sub-areas: physical score (SF12-PCS) and mental score (SF12-MCS). The Turkish validity and reliability study of the scale was performed by Soylu. The internal consistency coefficients of the scale were found for the components α=0.73 and 0.72.[15]

Statistics: SPSS 26.0 package program was used to evaluate the data. In the presentation of descriptive data, mean, standard deviation, number, percentage, and median values are given. Whether the numerical values showed normal distribution or not was evaluated with the Kolmogorov-Smirnov test. Mann Whitney U test was used to compare two groups that did not show normal distribution. The Kruskal-Wallis test was used for multi-group comparisons that did not show normal distribution. Correlations between non-normally distributed numerical data were evaluated with the Spearman correlation test. Statistical significance was accepted as $p < 0.05$.

RESULTS

A total of 400 people, 200 pregnant and 200 control group members, participated in the study. The mean age of the pregnant group was 27.6±4.3, and the

mean week of gestation was 25.5±9.3. The mean age in the control group was found to be 26.91±7.4 years; a statistically significant difference was found between the two groups (Z:-3.635; p=0.0001). Although the pregnant group had higher scores regarding coronavirus anxiety, there was no statistically significant difference between the groups (Z:-1.679 p=0.093). Sleep quality total score was statistically significantly higher in the pregnant group than in the control group (Z:-3.138; p=0.002). The physical quality of life score was statistically significantly higher in the pregnant group (Z:-5.039; p=0.0001). The control group's psychological quality of life was statistically significantly higher (Z:-2.628; p=0.009). Scale scores are summarised in Table 1.

Table 1. Pregnant and control age comparison according to scale scores.

	Pregnant Group (n:200) Mean±SD	Control Group (n:200) Mean±SD	TOTAL	Z	p*
Age (min-max)	27.6±4.3	26.91±7.4	27.25±6.09	-3.635	**0.0001**
Pregnancy Week (min-max)	25.5±9.3				
CAS	2.06±2.83	1.5±2.3	1.8±2.6	-1.679	0.093
PSQI	8.08±3.4	6.09±3.4	7.5±3.2	-3.138	**0.002**
SF12-PCS	43.59±6.73	40.43±5.9	42.01±6.5	-5.039	**0.0001**
SF12-MCS	34.02±7.4	35.4±6.1	34.7±6.8	-2.628	**0.009**

*: Mann Whitney U test; CAS: The Coronavirus Anxiety Scale; PSQI: Pittsburgh sleep quality index; SF12-PCS: Physical Score; SF12-MCS: Mental Score.

The correlations of the scales with each other in the pregnant group were examined in Table 2. A statistically weak correlation was found between CAS and PSQI scale (r:0.222, p=0.002). A statistically significant correlation was found, and the correlation level was found to be very weak CAS and SF12-PCS (r:0.156, p=0.027); no correlation was found between CAS and SF12-MCS (r:-0.39, p=0.582). A statistically significant correlation was found, and the correlation level was found to be very weak PSQI and SF12-PCS (r:0.155, p=0.029); no correlation was found between PSQI and SF12-MCS (r:-0.055, p=0.438).

While 151 people in the pregnant group reported poor sleep quality, 130 in the control group said they had poor sleep quality. (Table 3). Pregnant women were found to have worse sleep quality, which was statistically significant between the two groups (x^2:5.257; p=0.02).

Table 2. Examination of the correlations of the scales with each other in the pregnant group.

		CAS	PSQI	SF12-PCS	SF12-MCS
CAS		1			
PSQI	r	0.222**	1		
	p	0.002			
SF12-PCS	r	0.156*	0.155*	1	
	p	0.027	0.029		
SF12-MCS	r	-0.039	-0.055	-0.556**	1
	p	0.582	0.438	0.001	

*: Spearman test, p<0.05 (2-tailed); **: Spearman test, p<0.01; CAS: The Coronavirus Anxiety Scale; PSQI: Pittsburgh sleep quality index; SF12-PCS: Physical Score; SF12-MCS: Mental Score.

Table 3. Comparison of sleep quality in pregnant and control groups.

PSQI	GOOD SLEEP QUALITY	POOR SLEEP QUALITY	TOTAL	X^2	p*
Pregnant Group	49	151	200	5.275	0.02
Control Group	70	130	200		
TOTAL	119	281	400		

*: The Chi-Square Test; PSQI: Pittsburgh sleep quality index.

There was no difference between the periods when sleep quality was evaluated according to pregnancy trimesters (Table 4) (x^2:1.479; p=0.477).
The pregnant and control groups were evaluated in Table 5 according to sleep quality subscales. Sleep latency, efficiency, and disorder scores were statistically significantly higher in the pregnant group (respectively, Z:-1.988, p=0.047; Z:-5.009, p=0.0001; Z:-5.230, p=0.001). The use of sleeping medication was statistically significantly higher in the control group (Z:-2.187, p=0.029).

Table 4. Examination of sleep quality according to pregnancy trimesters.

		Good Sleep	Poor Sleep	Total	X^2	p*
Pregnancy trimester	1.	11	25	36	1.479	0.477
	2.	15	59	74		
	3	23	67	90		
Total		49	151	200		

*: The Chi-Square Test; PSQI: Pittsburgh sleep quality index.

Table 5. Evaluation of sleep quality and subscales in the pregnant and control groups.

PSQI	Pregnant Group Median (IQR)	Control Group Median (IQR)	Z	p*
Subjective sleep quality	1.0 (1.0)	1.0 (1.0)	-1.859	0.063
Sleep latency	2.0 (1.75)	2.0 (1.0)	-1.988	**0.047**
Sleep duration	1.0 (1.0)	0.0 (1.0)	-1.758	0.079
Sleep efficiency	1.0 (2.0)	0.0 (1.0)	-5.009	**0.0001**
Sleep disorder	2.0 (1.0)	1.0 (1.0)	-5.230	**0.0001**
Sleeping medication	0.0 (0.0)	0.0 (0.0)	-2.187	**0.029**
Daytime dysfunction	1.0 (2.0)	1.0 (2.0)	-1.242	0.214
PSQI Total Score	8.0 (4.0)	7.0 (5.0)	-3.138	**0.002**

*: Mann Whitney U test; PSQI: Pittsburgh sleep quality index.

DISCUSSION AND CONCLUSION

Sleep is a physiological need that covers approximately one-third of our lives, necessary for our physical and mental health. Due to the importance of this period, many studies investigate the various effects of sleep affecting our lives and the reasons for these effects. It has been observed that sleep quality deteriorates and is affected by many parameters, especially in studies conducted with pregnant women. In addition, sleep quality is closely related to perceived stress. It is known that with the physical and mental changes that occur in pregnant women, night sleep also affects the quality of life in pregnant women.[16,17] In this study, we aimed to evaluate pregnant women's anxiety, sleep quality, and quality of life during the pandemic period we lived in. We wanted to contribute to the literature with this study.
During the pandemic period, it was determined that the most common symptoms of depression, anxiety, post-traumatic stress disorder, and sleep disorders were found after the infection, especially in people infected with the coronavirus.[18] In studies conducted with pregnant women, there was an increase in anxiety and depressive symptoms during this period.[19] During the pandemic, the inability to be with family members at birth, the fear of virus transmission, and the daily coronavirus (the number of cases and deaths) are among the reasons pregnant women create anxiety and depressive symptoms.[5] However, the study of Zhou et al., which reported that pregnant women were less affected by depression, anxiety, and sleep disorders during the COVID-19 period, published an investigation contrary to our findings and claimed that pregnant women were more resistant to anxiety disorders, depression and sleep disorders.[6] In our study, there was no difference between the two groups regarding coronavirus anxiety. In addition, no significant difference was found between coronavirus anxiety and the sociodemographic characteristics of our participants. One of the most important reasons for this may be that the healthy and pregnant groups are intensely concerned about the coronavirus.
Anxiety and depression symptoms that may develop due to hormonal fluctuations and environmental effects during pregnancy and breastfeeding lead to various physiological and psychological effects during this period.[20] Especially sleep disorders have been the subject of research in this period. In addition to studies reporting that poor sleep quality is associated with depression and anxiety symptoms, it has been reported that pregnancy anxiety may be

related to poor sleep quality and premature birth.[21] In a study evaluating sleep quality in pregnant women during the pandemic, 88% reported poor sleep quality.[2] In our study, 75% of pregnant women reported poor sleep quality and claimed significantly worse sleep than the control group. When studies evaluating sleep quality in pregnant women before the pandemic are examined, lower rates are observed.[22]

During the pandemic, the sleep quality of pregnant women was impaired compared to the healthy group, and the rate of those whose sleep quality was impaired compared to previous studies increased. No studies were found comparing sleep quality before and after the pandemic during pregnancy. The pandemic may have many factors in the disruption of sleep, pregnant women at home may have isolated themselves more during this process, and their bed arrangements may have been disturbed. In addition, increased stress levels in pregnant women may also have adversely affected their sleep.

In a study evaluating the quality of life of pregnant women in which 37 studies conducted before pregnancy were assessed, it was found that while the physical component of quality of life decreased during pregnancy, the mental part remained stable and even improved during pregnancy.[23] Social isolation with curfews and restrictions during the pandemic period, feeling the threat of not being able to reach nutritional needs, security concerns, experiencing financial losses, misinformation about the disease, risky groups such as healthcare professionals or people with a history of infection with the Covid-19 virus in their family members' feeling lonely and its stigmatisation affected the quality of life.[24] In addition, it was found that the quality of life was below the moderate level in studies conducted during pregnancy.[25]

In our study, The Quality of Life SF12-PCS was higher in pregnant women, but the SF12-MCS was lower than in healthy controls. It may show that pregnant women feel worse mentally during this pandemic process. We think that staying at home, being physically removed from business life, and working remotely from the office improve the physical quality of life. However, unfortunately, mental overwork related to the pandemic seems to have adversely affected the mental quality of life in pregnant women.

In longitudinal studies comparing sleep quality between trimesters of pregnancy, it was found that the worst sleep quality was in the third trimester, and sleep quality decreased from the second trimester to the third trimester.[26] In addition, studies have found that sleep quality is associated with sociodemographic characteristics. It has been found that living in a crowded family with a high number of children worsens sleep quality.[27] We did not see any difference between trimesters regarding sleep quality in pregnant women who participated in our study. In addition, there was no significant relationship between total PUKI score and age, gestational week, number of pregnancies, and number of children. The most common sleep disorders in pregnancy are caused by frequent urination at night, baby movements, back and waist pain, cramps, and weight gain.[28] These symptoms usually occur in the third trimester of pregnancy. In addition, it was observed that there was an increase in daytime sleepiness in the first trimester of pregnancy. Generally, sleep quality decreases during pregnancy.[29] The physical and mental changes in pregnant women during all three trimesters of pregnancy may have caused the similarity in the sleep quality we obtained in our study. Our research thought that different results could be obtained by transforming the cross-sectional evaluation into a follow-up study.

When the sleep quality scale sub-parameters were evaluated, a significant difference was found between the pregnant women and the control group in terms of sleep latency, sleep efficiency, sleep disorder, and sleep medication subscale scores (respectively $p=0.047$, $p=0.0001$, $p=0.0001$, $p=0.029$). No significant difference was found between the groups regarding subjective sleep quality, duration, and daytime dysfunction from other subscales. A study conducted on pregnant women observed that the rates of poor sleep quality varied between 46 -89.3%.[24] The difference in the sub-parameter of sleeping medication may be related to avoiding drug use in pregnant women. Other observed differences may also be associated with physiological and psychological changes during pregnancy.

Another critical issue in our study is examining the correlation between CAS, quality of life, and sleep. Recently, the number of studies investigating sleep quality on quality of life has increased.[30] A study conducted on pregnant women showed that a decrease in sleep quality decreases the quality of life.[30] In our research, our correlations between sleep quality and two sub-parameters of quality of life during the pandemic were very weak. This does not coincide with the hypothesis we established at the beginning of this study. This may be because the quality of life is affected by very different conditions (restriction, stress, etc.) during the pandemic. Coronavirus anxiety also negatively affected the quality of life.

In conclusion, the study's limitations are the cross-sectional evaluation of pregnant women rather than a follow-up study. The collected cases are limited to the state hospital in the province, and the sleep assessment with subjective scales, not in the sleep laboratory. The relatively sufficient number of cases

participating in our study, the fact that pregnant women and healthy controls were not selected from complicated issues, and the fact that it is one of the rare studies evaluating both the quality of life and sleep quality of pregnant women during the pandemic are the features that may make our research meaningful. Sleep and mental stress impair the quality of life of pregnant women and pose a risk for their unborn children. As a result, the pandemic horribly affects pregnant women's sleep quality and mental quality of life. Clinicians should take care to evaluate the sleep quality of pregnant women in this process. In addition, providing sleep-oriented psychological support to pregnant women can reduce the long-term adverse effects of this pandemic.

Ethics Committee Approval: The study was approved by the Duzce University, Non-Interventional Clinical Research Ethics Committee (Date:05/04/2021, decision no:2021/99).

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

Author Contributions: Concept –ZBK, ES, BS; Supervision – ZBK, ES, BS; Materials – ES; Data Collection and/or Processing – ES, BS; Analysis and/ or Interpretation – ZBK, ES, BS; Writing – ZBK, ES.

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