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Relationship between Prenatal Comfort and Sleep Quality in Pregnant Women in the Third Trimester

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Abstract: *The study aims to determine the relationship between prenatal comfort and sleep quality in the pregnant women in the third trimester. This analytical cross-sectional type research was conducted between February 2019 and June 2019. The study sample consisted of 120 pregnant women who were in the third trimester who admitted for routine pregnancy follow-up to Çankırı State Hospital's obstetrics outpatient clinic and who agreed to participate in the study. The data were collected by the face-to-face interview technique using the sociodemographic and obstetric characteristics form, developed by the researchers, the "Prenatal Comfort Scale" (PCS) and the Pittsburgh Sleep Quality Index (PSQI). Numbers, percentiles, mean, and standard deviation was used in the analysis of the data. Pearson correlation analysis was used to determine the relationship between PCS and PSQI. Of the pregnant women, 41.7% was in the 25-31 age group, 47.5% was a secondary school graduate, 54.2% was in the 27th-34th week of gestation, 73.6% was multiparous, and 17.3% had an unplanned pregnancy. The PCS and husband, fetus, people, mother, myself score averages of the pregnant women were 65.72±12.48, 17.57±4.06, 9.16±1.70, 13.56±2.76, 13.63±2.62, 11.80±3.45, respectively. The mean PSQI score of the pregnant women was 6.10±2.97, subjective sleep quality score was 1.15±0.78, sleep latency was 1.37±0.87, experimental group sleep duration was 0.43±0.71, habitual sleep efficiency was 0.57±0.95, sleep disorder was 1.50±0.58, daytime sleep dysfunction was 1.09±0.93 and there was no use of sleep medication in the pregnant women. Of the pregnant women, 49.2% was found to have a poor sleep quality. There was no statistically significant relationship between prenatal comfort and sleep quality, and their sub-scales, of the pregnant women in the third trimester (p>0.05). In line with the findings of the research, the comfort levels of the pregnant women were good, but nearly half of them was found to have a poor sleep quality. No relationship was found between the comfort level and sleep quality of the pregnant women.*

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I. Introduction

Pregnancy is a period characterized by physiological and psychological changes, and disturbances due to these changes, which affect comfort of the pregnant woman.[1] In the literature, the most common disorders related to changing anatomical and physiological structure in the third trimester that affect the comfort of pregnant women were related as edema, frequent urination, muscle cramps, back pain, fatigue, weakness, shortness of breath, heartburn, indigestion, Braxton Hicks contractions, and insomnia.[2,3,4].

Comfort is a condition of being stress-free and comfortable physically, spiritually and socially. Kolcaba describes the concept of comfort, which he explained with a holistic view, as the experience that felt when meeting basic human needs for relief, peace and overcoming problems. Kolcaba has formed the taxonomic structure of comfort concept as comfort levels and comfort dimensions. When this taxonomic structure is explained associated with sleep quality, the relief dimension of comfort refers to the recovery from the insomnia by improving the sleep quality of the pregnant women, who suffer sleep problems, through nursing practices. Relief refers to the comfort achieved through the training given by nurses to a pregnant woman experiencing sleep problems in the third trimester. Superiority is stated as overcoming the problems of the pregnant woman. Among the dimensions of comfort theory, physical comfort includes physiological factors such as nutrition, hydration, and sleep quality of the pregnant woman. He emphasizes that one of these physiological indicators, the deviation from the normal will also affect comfort. Psychospiritual comfort covers the feelings that the pregnant woman feels during this period, such as body image, self-respect, fear of childbirth. Environmental comfort; this dimension covers the impact of external conditions such as heat, light, and noise on comfort during the pregnancy. Sociocultural comfort dimension includes pregnant woman's communication with nurses, midwives and other health team members, information and counseling, and interpersonal communication of the pregnant woman.[5,6,7]

Prevalence studies aimed at identifying sleep problems that are thought to affect the comfort of the

pregnant woman during the pregnancy have reported that pregnant women in the third trimester experience sleep problems at rates ranging from 56% to 97%. [8,9,10] In Turkey, Taşkıran (2009) reported that 86% of pregnant women and Özkan (2013) reported that 89.3% of them has sleep problems in the third trimester.[11-12]

Considering the pregnancy outcomes of pregnant women with poor sleep quality during the pregnancy, negative effects on the labor and fetal health were observed. It has been shown that the risk of preterm labor is increased, cesarean delivery is more common, vaginal delivery and the labor is prolonged in vaginal delivery in pregnant women with poor sleep quality. The effects of poor sleep quality on neonatal health emerges as low neonatal birth weight and a low neonatal Apgar score.[13,14,15,16]

In the light of this information, the purpose of this study is to determine the relationship between prenatal comfort and sleep quality in the pregnant women in the third trimester.

II. Material And Methods

The study is a descriptive and correlational type research.

Study Population and Date

The study was conducted between February 2019 and June 2019 at the Çankırı State Hospital's obstetrics outpatient clinic.

Sample of the Study

The pregnant women who admitted to the hospital follow-up outpatient clinics for routine check-up and who met the research inclusion criteria were selected by the simple random method. The sample size of the study was determined by the power analysis. The effect size was determined first when calculating the sample size of the study. The effect size was calculated as 0.460 by taking into account the PCS averages and standard deviations in the study by Nakamura et al. (2015).[17] In the power analysis, it was determined that at least 120 pregnant women should be included to achieve an 80% power with 95% confidence interval and a 5% margin of error.

Sampling inclusion criteria

The study was conducted with the pregnant women in the third trimester of pregnancy, had single-fetus pregnancy, had no risky pregnancy characteristics (chronic disease, preeclampsia, multiple pregnancy, placenta previa, etc.), and who agreed to participate in the research.

Data Collection Instruments

In the collection of the study data, the Prenatal Comfort Scale (PCS), Pittsburgh Sleep Quality Index (PSQI), and the pregnant women introductory information form, developed by the researchers, were used. In the pregnant women's sociodemographic and obstetric characteristics form, there are a total of 17 items, including age, education level, occupation, number of pregnancies and childbirths, etc.

The Prenatal Comfort Scale (PCS)

The Prenatal Comfort Scale (PCS) was developed by Takeishi et al. in Japan in 2011 to determine prenatal comfort. While the first version of the scale had 35 items, it was later revised by the authors and shortened by reducing it to 15 items.14. The short-form of the scale consists of 15 items and 5 sub-scales. The sub-scales and the item are as follows: "The effect of improved relationships with spouse on the paternal role - Husband" (3,4,7,9), "Interact with the movements of the fetus - Fetus" (13,14), "Social support from the people around - People" (11,12,15), "Acknowledgment of the motherhood role, and bonding with the baby - Mother" (1,5,8), "Noticing the changes experienced during the pregnancy - Myself" (2,6,10). The scale is a 6-point Likert type scale. Each item is scored between 0 and 5 (0 = Strongly disagree, 1 = Disagree, 2 = Neither agree nor disagree, 3 = Somewhat agree, 4 = Agree, 5 = Strongly agree). The scale is assessed out of a total of 75 points. It is interpreted as the level of comfort decreases as the points decrease, and the level of comfort increases as the points increase. There are no reverse-scored items and cutoff points in the scale. The Cronbach's Alpha value of the scale is .95.18 Cronbach's alpha of the scale, which its Turkish validity and reliability study was carried out by Kaya Şenol et al., was 0.82.[19] The Cronbach's alpha was 0.87 in this study.

Pittsburgh Sleep Quality Index (PSQI)

PSQI was developed by Buysse et al. in 1989, and having a Cronbach's Alpha of 0.83, the scale has been shown to have adequate reliability and validity. The Turkish validity and reliability study of the scale has been conducted by Ağargün et al. in 1996. The Cronbach's Alpha internal consistency coefficient of the scale was 0.80, and Pearson product-moment correlation coefficient values were between 0.93 and 0.98. In this study, Cronbach's alpha coefficient of the PSQI was found to be 0.85

PSQI consists of 24 items in total. Of them, 19 of the items are self-report items and answered by the individual, and remaining five questions, answered by the individual's spouse or a roommate, are used for clinical information, not for scoring. The 18 items included in the scoring are grouped under 7 components, which are;Component 1: Subjective sleep quality (Item 6). Component 2: Sleep latency (Item 2 and Item 5a). Component 3: Sleep duration (Item 4). Component 4: Habitual sleep efficiency (Item 1 and Item 3). Component 5: Sleep disorder (5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j). Component 6: Use of sleeping medication (Item 7). Component 7: Daytime sleep dysfunction (Item 8, Item 9).

Each item is scored between 0 (good) and 3 (poor). The sum of all components gives the scale score. The total score ranges from 0 to 21 and sleep quality deteriorates as the total index score increases. The scale does not indicate the presence and prevalence of sleep disorder. However, a total score of 5 and above indicates a poor sleep quality. On the scale, 0-4 points indicate good sleep quality, and 5-21 points indicate poor sleep quality.[20,21]

The dependent variable of the study is the comfort level of the pregnant women in the third trimester,The independent variables of the study are age of the pregnant women, education status, employment status, number of pregnancies, and planned pregnancy status.

Data Collection

The data were collected in the pediatric outpatient clinic by face-to-face interview method from the pregnant women who met the research inclusion criteria and agreed to participate in the research. The interviews with the pregnant women were held in a previously designated private room. After the pregnant women were informed about the research, those who agreed to participate were asked questions in the questionnaire and the data were collected by the researchers. Application of data collection questionnaires lasted approximately 10-15 minutes.

Data Analysis

The study data were entered into the computer statistical package program and analyzed. Prenatal comfort scale data were evaluated by Kolmogorov-Smirnov test and analyzed with parametric tests as they showed a normal distribution. Numbers, percentiles, mean, and standard deviation was used in the analysis of the data. Pearson correlation analysis was used to determine the relationship between PCS and PSQI. $P<0.05$ was accepted as the level of significance.

Ethical Considerations

Approval of the ethics committee was obtained prior to the research (12.10.2018, Decision no:54). Institution permission was obtained from the studied hospital. The data collection was planned so that the pregnant woman would be able to answer the questions in a way that would not interfere with her other interventions at the hospital. It was explained to the individuals that the research data would be used and published for scientific purposes without using the names of the participants, and their verbal consent was obtained in accordance with the Declaration of Helsinki.

III. Result

Table 1. Distribution of Socio-Demographic and Obstetric Characteristics of the Pregnant Women (N=120)

Characteristic	n	%	**Characteristic**	n	%
Maternal Age			**Education**		
18-24	37	30.8	Elementary School	28	23.3
25-31	50	41.7	High School	57	47.5
32- 49	33	27.5	University	35	29.2
Husband Education			**Week of pregnancy**		
Elementary School	18	15.0	27-34	65	54.2
High School	67	55.8	35-40	55	45.8
University	35	29.2			
Employment Status			**Planned pregnancy**		
No	80	66.7	Yes	82	68.3
Yes	40	33.3	No	38	31.7
Economic status			**Pregnancy**		
Income more than expenditure	16	13.3	Primipar	48	40.0
Income covers expenditure	74	61.7	Multipar	72	60.0
Income less than expenditure	30	25.0	**Toplam**	120	100.0

Of the pregnant women, 41.7% was in the 25-31 age range, 47.5% was a secondary school graduate, and 25% had a low level of income. Of the respondents, 54.2% was in the 27th-34th week of gestation, 73.6% was multiparous, and 17.3% had an unplanned pregnancy (Table 1).

Table 2. Distribution of PCS Total and Sub-Scale Score Averages of the pregnant women (n=120)

PCS	Min.	Max	Median	Mean	StandartDiseas
PCS	0	75	65	65.72	12.48
Husband	0	20	18	17.57	4.06
Fetus	0	10	9	9.16	1.70
People	0	15	13	13.56	2.76
Mother	0	15	14	13.63	2.62
Myself	0	15	11	11.80	3.45

The PCS and husband, fetus, people, mother, myself score averages of the pregnant women were 65.72±12.48, 17.57±4.06, 9.16±1.70, 13.56±2.76, 13.63±2.62, 11.80±3.45, respectively. Prenatal comfort level and sub-scale comfort of the pregnant women in the third trimester were found to be good (Table 2).

Table 3. Mean and percentage distribution of PSQI subcomponents the pregnant women in the third trimester (n=120)

PitsburgSleepQuality Index	Mean±SD n	(Min-Max) %	PitsburgSleepQuality Index	Mean±SD n	(Min-Max) %
Subjectivesleepquality	**1.15±0.78**	**(0-3)**	**Habitualsleepefficiency**	**0.57±0.95**	**(0-3)**
Verygood (0 score)	22	18.3	≥%85 (0)	81	67.5
Fairlygood (1 score)	65	54.2	%75-84 (1)	20	16.7
Fairlybad (2 score)	26	21,7	%65-74 (2)	9	7.5
Verybad (3 score)	7	5.8	≤%65 (3)	10	8.3
Sleeplatency	**1.37±0.87**	**(0-3)**	**Sleepdisturbances**	**1.50±0.58**	**(0-3)**
≤15 min (0)	17	14.2	Not duringthepastmonth (0)	2	1.7
16-30 min (1)	56	46.7	Lessthanonce a week (1)	59	49.2
31-60min (2)	33	27.5	Onceortwice a week (2)	56	46.7
≥60 min (3)	14	11.7	Three ormoretimes a week (3)	3	2.5
Sleepduration	**0.43±0.71**	**(0-3)**	**Daytimedysfunction**	**1.09±0.93**	**(0-3)**
≥7 hour (0)	82	68.3	Not duringthepastmonth (0)	39	32.5
6-6.9hour (1)	27	22.5	Lessthanonce a week (1)	39	32.5
5-5.9 hour (2)	9	7.5	Onceortwice a week (2)	34	28.3
≤5 hour (3)	2	1.7	Three ormoretimes a week (3)	8	6.7
Use of sleepmedication	**0,00±0,00**	**(0-0)**	**PSQI**	**6.10±2.97**	**(1-17)**

When the PSQI sub-component mean scores of the pregnant women in the third trimester were examined, subjective sleep quality score was found to be 1.15±0.78, sleep latency was 1.37±0.87, experimental group sleep duration was 0.43±0.71, habitual sleep efficiency was 0.57±0.95, sleep disorder was 1.50±0.58, daytime sleep dysfunction was 1.09±0.93 and there was no use of sleep medication in the pregnant women.

A PSQI total score of 5 and above indicates a poor sleep quality. On the scale, 0-4 points indicate good sleep quality, and 5-21 points indicate poor sleep quality. In this study, 50.8% (61) of the pregnant women had good sleep quality and 49.2% (59) had poor sleep quality.

Table 4. Relationship between prenatal comfort levels and sleep quality of the pregnant women in the third trimester (n=120)

PCS		PSQI						
		Subjective sleep quality	**Sleep latency**	**Sleep duration**	**Habitual sleep efficiency**	**Sleep disturbances**	**Daytime dysfunction**	PSQI
Husband	r	-,025	-,032	-,048	-,037	-,102	-,065	-,079
	p	,789	,731	,604	,687	,269	,482	,390
Fetus	r	-,049	-,034	-,029	-,004	-,115	-,120	-,091
	p	,592	,713	,757	,966	,211	,191	,322
People	r	-,043	-,062	-,114	-,019	-,129	-,079	-,112
	p	,641	,504	,214	,836	,161	,393	,221
Mother	r	-,001	-,035	-,049	-,002	-,108	-,082	-,069

	p	,991	,704	,592	,985	,241	,374	,451
Myself	r	,151	,027	-,027	,060	-,101	-,059	,022
	p	,100	,766	,771	,512	,273	,519	,808
PKO	r	,017	-,028	-,062	-,001	-,128	-,088	-,071
	p	,852	,759	,498	,996	,165	,337	,438
	N	120	120	120	120	120	120	120

There was no statistically significant relationship between prenatal comfort and sleep quality, and their sub-scales, of the pregnant women in the third trimester ($p>0.05$).

IV. Discussion

It is of importance that comfort, which is defined as being stress-free and comfortable from a physical, spiritual and social standpoint, is at a good level during the pregnancy.[5] In this study, the pregnant women in the third trimester were found to have a good score (65.72±12.48) in PCS, which has the highest score of 75 points. Nakamura et al., who developed the 35-item Prenatal Comfort Scale, stated in their study conducted with this scale that the comfort in late pregnancy is at a good level and that the knowledge and practices of the pregnant women with good comfort levels are better in the early postpartum period. They also stated that the comfort level of women is better thanks to the nursing practices during this period, and thus they can easily adjust to the motherhood roles during the postpartum period.[17] Fenwick et al. states that the health level of the woman and the newborn in later life is closely related to the quality of the nursing care she receives.[22] In this case, comfort levels will be improved when nurses observe the characteristics and norms of this period and assess deviations from the normal and perform the necessary interventions, take precautions and informs the women in line with needs in or order to help them overcome the problems.

Due to hormonal and physical changes in the pregnancy period, there are many disorders in which the comfort of the pregnant woman is affected. Especially in the third trimester, increased respiratory problems caused by the pressure from the growing fetus on the diaphragm, frequent urination at night, back pain, leg cramps, diseases such as restless leg syndrome affect the sleep habits and sleep quality of the pregnant woman.[8,23] Sleep problems during the pregnancy, especially in the third trimester, are common and affect health negatively.[24] As developed by Buysse et al. (1989) to evaluate sleep quality subjectively, the Pittsburgh Sleep Quality Index (PSQI) global score of ≥5 indicates poor sleep quality. In this study, 49.2% of the pregnant women in the third trimester was found to have a poor sleep quality.[21] In literature review, Naud et al. (2010) have stated in their study in Canada that 56% of pregnant women in the third trimester had poor sleep quality.[10] In their study in Taiwan, Tsai et al. (2011) found that 50% of the pregnant women, and in another in Taiwan, Hung et al. (2013) reported that 65.5% of pregnant women in the third trimester had poor sleep quality. In their study in New Zealand, Hutchison et al. (2012) reported that 71.5% of pregnant women had poor sleep quality.[9,25,26] In Turkey, Taşkıran (2009) and Özkan (2013) stated that 86% and 89.3% of pregnant women, respectively, had poor sleep quality.[11,12] According to the studies, poor sleep quality is observed in most of the pregnant women in the third trimester, and the results of our study are in line with the literature results.

PSQI score ranges from 0 to 21 and sleep quality deteriorates as the total index score increases.[21] In our study, the mean PSQI global score in all pregnant women was 6.10±2.97. In a study of pregnant women in the third trimester in Melbourne, Australia, Coo et al. (2013) reported a PSQI global score of 5.96±3.01.27 In two different studies of pregnant women in the third trimester in Taiwan, the PSQI global score was obtained by Tsai et al. (2011) as 6.06±3.10, and by Hung et al. (2013) as 7.25±3.43. Naud et al. (2010) reported the PSQI global score for the pregnant women in the third trimester in Canada as 6.73±4.02. The PSQI global score was reported as 6.85±3.63 in a study conducted by Çoban and Yanıkkerem (2010) in Aydın, Turkey.[10,25,26]

The main goal, especially in the third trimester, is to provide pregnant women's comfort during pregnancy through supportive nursing interventions.29 Comfort is a basic human requirement that is sought from birth and desired to be reached throughout our lives. In nursing care, it is an intended outcome of the interventions applied.6 Edema, frequent urination, muscle cramps, back pain, fatigue, weakness, shortness of breath, heartburn, indigestion, Braxton Hicks contractions, and insomnia are among the problems that can reduce the comfort during the pregnancy.30 In this study, which investigates the relationship between comfort level and sleep quality of pregnant women in the third trimester, no statistically significant correlation was found between comfort level and sleep quality, and sub-scales, during the pregnancy ($p>0.05$). However, Kolcaba states that physical comfort in the comfort theory is related to physical perceptions, and includes physiological factors such as resting, relaxation, and sleep, which affect an individual's physical condition. Kolcaba states that physical comfort, whether or not there is a stimulus, stems from the individual's responses to the disease. In this sense, the necessary physiological indicators for physical comfort include health indicators of metabolic functions, such as fluid electrolyte balance, regular and balanced blood biochemistry, adequate oxygen saturation, etc. Kolcaba emphasizes that the deviation from normal in one of these physiological indicators, such as sleep quality, will also affect comfort.[5,6]

V. Conclusion

In line with the findings of the research, the comfort levels of the pregnant women were good, but nearly half of them was found to have a poor sleep quality. No relationship was found between the comfort level and sleep quality of the pregnant women.

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