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Evaluation of sleep quality and related factors in pregnant women

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Research Article

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ABSTRACT

Objective: Although the pregnancy period is a physiological process, it can disrupt the sleep pattern and quality with some changes it causes. In this study, it was aimed to determine sleep quality, affecting factors and sleep problems, if any, in pregnant women who applied to our outpatient clinic for follow-up.

Materials and Methods: This study, which was designed in a descriptive style, was conducted on 256 pregnant women who applied to the outpatient clinic. The data form included personal information, factors affecting sleep quality, sleep problems and Pittsburg Sleep Quality Index. In addition to descriptive statistics, Mann-Whitney U and Kruskal Wallis tests were used to evaluate the data uploaded to the SPSS program. The error level was set to 0.05.

Results: The mean age of the pregnant women was 28.55. It was observed that the mean total PUKI score was 6.27±3.94 (0-18) and the mean sleep duration was 7.5 hours (3-14). Sleep quality was poor in 49.6% of the pregnant women. It was found that the sleep quality of pregnant women was poor in younger than 35 years old (p=0.026), education level of high school and above (p=0.010), who has gender expectetion (p=0.041) and not socially supported (p=0.009). The median weight gain in the third trimester was higher in pregnant women with poor sleep quality (p=0.022). It was determined that musculoskeletal pain, discomfort, frequent urination, swelling in the feet, pain/cramp in the legs and burning in the stomach during pregnancy affected sleep quality negatively. In pregnant women with poor sleep quality; problems such as shortening of sleep duration, difficulty in falling asleep, frequent interruption of sleep, difficulty in falling asleep again, waking up tired in the morning and waking up too early involuntarily were observed more frequently.

Conclusion: About half of the pregnant women have poor sleep quality; physical complaints are effective on sleep quality. Sleep quality should be evaluated in all pregnant women and recommendations should be made for sleep hygiene.

Keywords: Pregnancy, sleep quality, sleep hygiene.

Gebe kadınlarda uyku kalitesi ve ilişkili faktörlerin değerlendirilmesi

Süreç

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ÖZ

Amaç: Gebelik dönemi fizyolojik bir süreç olmasına rağmen neden olduğu bazı değişikliklerle uyku düzenini ve kalitesini bozabilir. Bu çalışmada polikliniğimize takip amacıyla başvuran gebelerde uyku kalitesi, etkileyen faktörler ve varsa uyku sorunlarının belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı tipte tasarlanan bu çalışma, polikliniğe başvuran 256 gebe üzerinde yapıldı. Veri formunda kişisel bilgiler, uyku kalitesini etkileyen faktörler, uyku sorunları ve Pittsburg Uyku Kalitesi İndeksi yer aldı. SPSS programına yüklenen verilerin değerlendirilmesinde tanımlayıcı istatistiklerin yanı sıra Mann-Whitney U ve Kruskal Wallis testleri kullanıldı. Hata seviyesi 0.05 olarak ayarlandı.

Bulgular: Gebelerin yaş ortalaması 28.55 idi. Ortalama toplam PUKİ puanının 6.27±3.94 (0-18) ve ortalama uyku süresinin 7.5 saat (3-14) olduğu görüldü. Gebelerin %49.6'sında uyku kalitesi kötüydü. 35 yaş altı (p=0.026), lise ve üzeri eğitim düzeyi (p=0.010), cinsiyet beklentisi olan (p=0.041) ve sosyal destek almayan gebelerin uyku kalitesinin kötü olduğu bulundu. (p=0,009). Üçüncü trimesterde medyan kilo alımı uyku kalitesi kötü olan gebelerde daha yüksekti (p=0.022). Gebelikte kas-iskelet ağrısı, rahatsızlık, sık idrara çıkma, ayaklarda şişlik, bacaklarda ağrı/kramp ve midede yanmanın uyku kalitesini olumsuz etkilediği belirlendi. Uyku kalitesi düşük olan gebelerde; uyku süresinin kısalması, uykuya dalmada güçlük, uykunun sık kesilmesi, tekrar uykuya dalmada güçlük, sabah yorgun uyanma ve istemsiz olarak erken uyanma gibi sorunlar daha sık gözlenmiştir.

Sonuç: Gebe kadınların yaklaşık yarısının uyku kalitesi kötüdür; fiziksel şikayetler uyku kalitesi üzerinde etkilidir. Tüm gebelerde uyku kalitesi değerlendirilmeli ve uyku hijyeni için önerilerde bulunulmalıdır.

Anahtar sözcükler: Gebelik, uyku kalitesi, uyku hijyeni.

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Introduction

Pregnancy is one of the most sensitive and important periods experienced by the female sex throughout her life. Although it is physiological, it affects the sleep pattern and quality as well as all systems through some changes it causes. Increased abdominal discomfort as a result of the pressure of the growing fetus on the diaphragm, nocturia, back pain, leg cramps, hormonal changes due to the increase in progesterone and estrogen levels, and diseases such as restless legs syndrome can disrupt the sleeping habits and sleep quality of the pregnant woman [1-3].

The American Sleep Disorders Association defined sleep disorders that may occur due to pregnancy as variable conditions that can progress from excessive sleepiness to severe insomnia [4,5]. The true incidence of sleep disorders in pregnant women is unknown. However, it has been reported that sleep disorders reach their highest values as they progress from the first trimester to the third trimester. Sleep disturbance was found in 97% of women in their third trimester [3,6]. In another study, it was stated that pregnancy increased existing sleep problems [7]. In a study examining sleep problems in pregnancy; It has been reported that restless legs syndrome increases in the late stages of pregnancy, the prevalence of insomnia varies between 45-70%, and this rate is considerably higher than the general population [8]. In another study; It has been found that sleep deficiency, which can be observed at a rate of 25-40% in early pregnancy weeks, increases to 60% as the gestational week progresses, and the presence of depressive symptoms negatively affects sleep [9].

However, sleep is one of the basic physiological needs of people to maintain both physical and psychological health. Healthy adults should fall asleep within 5-10 minutes after turning off the light and sleep for at least 7 hours [10,11]. Sleep problems that may occur during pregnancy can be partially reduced by providing sleep hygiene and some prophylactic interventions. However, it is a clinical condition that health professionals are not very aware of, not questioned much, and therefore can be overlooked and negatively affect the quality of life. As a result, counseling for sleep problems during antenatal care is not provided.

On the other hand, most pregnant women do not characterize sleep disorder as a problem and do not seek a solution. Therefore, health professionals should support women in detecting sleep problems, questioning its causes, and making a care plan for it [12]. However, it is not clear which subjects should be included in the counseling regarding the factors affecting sleep quality, and sociocultural and geographical differences show.

The aim of this study was to determine the sleep quality, affecting factors and sleep problems, if any, in pregnant women who applied to our outpatient clinic for follow-up.

Materials and Methods

The study was approved by the Sivas Cumhuriyet University non-interventional clinical research ethics committee (no: 2019-12/54), and was conducted in accordance with the principles of the Declaration of Helsinki. The universe of our study, which was designed in a descriptive style, was determined as 828 pregnant women who applied to the Obstetrics and Gynecology Polyclinics for outpatient follow-up between 01 January and 01 April 2020. Pregnant women were informed about the study before sampling. The study was conducted on 256 (80.50%) of 318 pregnant women who met the criteria.

Exclusion criteria (n=510)

- twin pregnancies (n=21),
- age < 18 (n=33),
- gestational week < 8 (n=147),
- illiterate (n=9),
- high risk pregnancies (n=254),
- Pregnant women whose sanity is not sufficient to answer the questions in the questionnaires (n=10),
- Those who did not sign consent forms and incomplete data forms (n=36) were excluded from the study.

All pregnant women were informed about the study and signed consent was obtained from those who agreed to participate in the study. A data collection form consisting of 51 questions, consisting of 2 parts, was distributed to the participants and they were allowed to fill in it themselves. In the first part of the data form, there were 32 questions created by the researchers as a result of the literature review and including sociodemographic data as well as obstetric

characteristics, sleep hygiene and factors affecting sleep quality.

In the second part, the Pittsburg Sleep Quality Index (PUKI) was used, which was developed by Buysse et al. (1989) and whose validity and reliability study was conducted in Turkey by Ağargün et al. (1996) [13,14]. This scale is a self-report scale that evaluates sleep quality and disturbance in the past month; It consists of a total of 19 questions and 7 components. Each item is evaluated over 0-3 points and the sum of the 7 component points gives the total PUKI score. The total score ranges from 0 to 21. A high score indicates poor sleep quality, a total score of ≤5 indicates "good sleep quality", and a score of >5 indicates "poor sleep quality".

The analysis was performed by using SPSS version 23.0 (SPSS Inc, Chicago, IL, USA). The normality of distribution was tested with the Kolmogorov-Smirnov test and Q-Q plots. Descriptive statistics (frequency, percentage, mean, median, minimum-maximum value, interquartile range) were used in the analysis of the categorical variables. Categorical data were analyzed with the Chi-Square test. When non-distrubuded normally, continous variables were evaluated with the Mann-Whitney U test or Kruskall Wallis test. In the comparison between the two groups, the Mann-Whitney U Test was used because the data did not comply with the normal distribution, while the Kruskal-Wallis Test was used when the distribution of the data was not normal during the comparison of more than two groups. A value of $p<0.05$ was considered statistically significant.

Results

Our study was carried out on 256 pregnant women with a mean age of 28.55 ± 5.52 (18.42). The number of pregnancies of pregnant women ranged from 1-11, the number of living children ranged from 0-7, and the number of miscarriages ranged from 0-9. It was observed that the mean total PSQI scores were 6.27 ± 3.94 (0-18) and the mean sleep time was 7.5 hours (3-14). The sleep quality of 49.6% (n=127) of the pregnant women was poor. Although the mean PUKI score increased in the later stages of pregnancy, this difference was not found to be statistically significant (p=0.132). The data of the PUKI scale scores are shown in Table 1.

Table 1. Total and subscale PUKI scores of pregnant women

Total PUKI score mean value ± SD (min-max)	6,27 ± 3,94 (0-18)
Total PSQI mean score by trimester ± SD (min-max)	
First Trimester (n:77)	5,75 ± 3,97 (0-17)
Second Trimester (n:100)	6,17 ± 3,80 (0-17)
Third Trimester (n:79	6,89 ± 4,05 (0-18)
Total Sleep Quality, n (%)	
Good (Total score ≤5)	129 (50,4)
Poor (Total score >5)	127 (49,6)
Subjective Sleep Quality mean score ± SD	1,14 ± 0,79
Sleep Latency (Delay) mean score ± SD	1,23 ± 0,93
Sleep Time mean score ± SD	0,82 ± 0,97
Sleep Efficiency mean score ± SD	0,98 ± 1,18
Sleep Disorder mean score ± SD	1,04 ± 0,66
Drug Use subtype mean score ± SD	0,05 ± 0,31
Daytime Dysfunction mean score ± SD	0,57 ± 0,88
Average Sleep Time (hours/day)	7,5 (3-14)

The distribution of pregnant women according to PUKI sub-components is presented in Table 2.

When the variables that are thought to affect sleep quality are investigated; It was found that the sleep quality of pregnant women younger than 35 years old (p=0.026), education level of high school and above (p=0.010), expectation of gender (p=0.041) and not socially supported (p=0.009). In addition, the number of people in the household with poor sleep quality was lower than those with good average values. Average weight gain in the third trimester of pregnancy was higher (Table 3).

Table 2. Distribution of pregnant women according to Pittsburg sleep quality index subcomponent scores

	0 n (%)	1 n (%)	2 n (%)	3 n (%)
1. Subjective Sleep Quality	54 (21,1)	**123 (48,0)**	69 (27,0)	10 (3,9)
2. Sleep Latency (Delay) Scores	58 (22,7)	**109 (42,6)**	60 (23,4)	29 (11,3)
3. Sleep Time	**134 (52,3)**	45 (17,6)	65 (25,4)	12 (4,7)
4. Sleep Activity	**130 (50,8)**	51 (19,9)	26 (10,2)	49 (19,1)
5. Uyku Bozukluğu	49 (19,1)	**149 (58,2)**	56 (21,9)	2 (0,8)
6. Drug Use subtype	**248 (96,9)**	4 (1,5)	3 (1,2)	1 (0,4)
7. Daytime Dysfunction	**165 (64,5)**	47 (18,4)	32 (12,4)	12 (4,7)

Table 3. Comparison of sleep quality of pregnant women according to socio-demographic characteristics

	Sleep Quality			Value
	Good (≤5) n (%)	Poor (>5) n (%)	Total n (%)	
Age				
<35	99 (47,1)	111 (52,9)	210 (82,0)	X^2=4,931
≥35	30 (65,2)	16 (34,8)	46 (18,0)	**p=0,026**
Living place				
Centre	89 (49,7)	90 (50,3)	179 (69,9)	X^2=1,258
District	20 (46,5)	23 (53,5)	43 (16,8)	p=0,533
Village	20 (58,8)	14 (41,2)	34 (13,3)	
Educational Status				
Primary school and below	26 (59,1)	18 (40,9)	44 (17,2)	
Middle School	46 (61,3)	29 (38,7)	75 (29,3)	X^2=11,422
High school	21 (34,4)	40 (65,6)	61 (23,8)	**p=0,010**
University and above	36 (47,4)	40 (52,6)	76 (29,7)	
Income rate				
no	14 (48,3)	15 (51,7)	29 (11,4)	
Below minimum wage	79 (52,3)	72 (47,7)	151 (59,0)	X^2=1,396
Minimum wage	16 (42,1)	22 (57,9)	38 (14,8)	p=0,706
Above minimum wage	20 (52,6)	18 (47,4)	38 (14,8)	
Number of people in the household	3 (2-13,1)	3 (2-10,2)	3 (2-13,2)	U=2,093
Median (min-max, IQR)				**p=0,036**
Job				
Housewife	107 (52,2)	98 (47,8)	205 (80,1)	X^2=1,340
Employee	22 (43,1)	29 (56,9)	51 (19,9)	p=0,247
Spouse's Employment Status				
Employee	116 (50,7)	113 (49,3)	229 (89,5)	X^2=1,178
Unemployed	13 (46,2)	14 (53,8)	27 (10,5)	p=0,555
Child Presence				
Yes	90 (54,5)	75 (45,5)	165 (64,5)	X^2=3,205
No	39 (42,9)	52 (57,1)	91 (35,5)	p=0,073
Gender expectation				
Yes	28 (40,0)	42 (60,0)	70 (27,3)	X^2=4,161
No	101 (54,3)	85 (45,7)	186 (72,7)	**p=0,041**
Any Chronic Disease				
Yes	10 (37,0)	17 (63,0)	27 (10,5)	X^2=2,153
No	119 (52,0)	110 (48,0)	229 (89,5)	p=0,142
Smoking				
Yes	5 (38,5)	8 (61,5)	13 (5,1)	X^2=0,780
No	124 (51,0)	119 (49,0)	243 (94,9)	p=0,377
Social support				
Yes	104 (55,3)	84 (44,7)	188 (73,4)	X^2=6,877
No	25 (36,8)	43 (63,2)	68 (26,6)	**p=0,009**
Daytime rest	117 (50,9)	113 (49,1)	230 (89,8)	X^2=0,208
Yes	12 (46,2)	14 (53,8)	26 (10,2)	p=0,648
No				
Weight gained during pregnancy	8 (0-20, 4)	11 (0-22, 5,75)	10 (0-22, 6)	U=2,284
3rd trimester (n=79)				**p=0,022**

Subjective sleep quality scores of pregnant women who stated that they were socially supported were also lower (p=0.007).

Sleep quality was found to be worse in pregnant women with a high median week of gestation (p=0.014). It was determined that the sleep problems of the pregnant women who stated that their sleep was irregular before pregnancy continued during the pregnancy period (p=0.012). When sleep quality is evaluated according to physical complaints during pregnancy; It was determined that musculoskeletal pain, discomfort, frequent urination, swelling in the feet, pain/cramp in the legs and burning in the stomach affected the sleep quality negatively. The effect of constipation on sleep quality was insignificant. In pregnant women with poor sleep quality; Shortening of sleep duration, difficulty in falling asleep, frequent interruption of sleep, difficulty in falling back, waking up tired in the morning and waking up too early involuntarily were observed more frequently (Table 4).

Table 4. Factors affecting sleep quality during pregnancy

	Sleep Quality			
	Good (≤5) n (%)	Poor (>5) n (%)	Total n (%)	Value
Pre-Pregnancy Sleep				
Regular	114 (54,0)	97 (46,0)	211 (82,4)	X^2=6,354
Irregular	15 (33,3)	30 (66,7)	45 (17,6)	**p=0,012**
Obstetric Features				
Gravida, mean (min- max)			2 (1-11)	
1	39 (43,8)	50 (56,2)	89 (34,8)	X^2=2,379
2-3	74 (53,6)	64 (46,4)	138 (53,9)	p=0,304
≥4	16 (55,2)	13 (44,8)	29 (11,3)	
Alive, mean (min- max)			1 (0-7)	
0	39 (42,9)	52 (57,1)	91 (35,5)	X^2=3,234
1	42 (55,3)	34 (44,7)	76 (29,7)	p=0,198
≥2	48 (53,9)	41 (46,1)	89 (34,8)	
Gestational week Median (min- max, IQR)	17 (8-41, 17,50)	22 (8-41, 19)	19 (8-41, 17)	U=2,446 **p=0,014**
Pregnancy period				
First Trimester	44 (57,1)	33 (42,9)	77 (30,0)	X^2=2,591
Second Trimester	50 (50,0)	50 (50,0)	100 (39,1)	p=0,275
Third Trimester	35 (44,3)	44 (55,7)	79 (30,9)	
Physical complaints				
muscle joint pain	22 (30,6)	50 (69,4)	72 (28,1)	**p<0,001**
feeling of discomfort	18 (26,5)	50 (73,5)	68 (26,6)	**p<0,001**
frequent urination	68 (43,9)	87 (56,1)	155 (60,5)	**p=0,010**
swelling in the feet	14 (35,0)	26 (65,0)	40 (15,6)	**p=0,034**
leg pain/cramp	38 (36,2)	67 (63,8)	105 (41)	**p<0,001**
heartburn	51 (43,2)	67 (56,8)	118 (46,1)	**p=0,034**
Sleep Problems				
Difficulty falling asleep	28 (32,2)	59 (67,8)	87 (34,0)	**p<0,001**
Frequent interruption of sleep at midnight	46 (33,6)	91 (66,4)	137 (53,5)	**p<0,001**
Light sleep, easy waking	45 (45,9)	53 (54,1)	98 (38,3)	p=0,263
Heavy sleep, inability to wake up easily	21 (70,0)	9 (30,0)	30 (11,7)	**p=0,022**
Difficulty falling back on when sleep is interrupted	42 (41,2) 10 (47,6)	60 (58,8) 11 (52,4)	102 (39,8) 21 (8,2)	**p=0,016** p=0,791
sleep snoring	12 (38,7)	19 (61,3)	31 (12,1)	p=0,165
Inability to breathe easily during sleep	9 (23,1)	30 (76,9)	39 (15,2)	**p<0,001**
Waking up too early in the morning when you don't want to	40 (47,6) 20 (26,7)	44 (52,4) 55 (73,3)	84 (32,8) 75 (29,3)	p=0,535 **p<0,001**
Difficulty waking up in the morning	45 (46,9)	51 (53,1)	96 (37,5)	p=0,384
Often waking up in the morning	29 (56,9)	22 (43,1)	51 (19,9)	p=0,302
Mostly daytime sleepiness	8 (24,2)	25 (75,8)	33 (12,9)	**p=0,001**
Increased sleep time				
Shortening of sleep time				

Discussion

All healthcare professionals who care for pregnant women are expected to provide training to their patients to increase their knowledge of pregnancy, birth and postpartum period. However, counseling for sleep problems, which are associated with pregnancy-related health problems and affect morbidity, is not provided in education plans. Many existing studies suggest evaluating the sleep quality of pregnant women, determining risk factors, and providing appropriate counseling services to those with poor sleep quality. In this study, sleep problems in pregnant women in our city were investigated, sleep quality was evaluated and the affecting factors were tried to be determined.

In studies conducted in our country using PUKI, it is observed that the rate of pregnant women with poor sleep quality varies between 39.6-57.8% [15-18]. In our study, the sleep quality was found to be poor in 49.6% of the pregnant women; The mean PUKI score was determined as 6.27 ± 3.94 [Range: 0-18]. Similar to the findings of our study, in the study of Ertekin et al, it was reported that pregnant women got the highest scores from the subcomponents of sleep latency, subjective sleep quality, and sleep disorder [17].

Ozhuner et al. In their study, it was found that more than half of the pregnant women had poor sleep quality, the rate of poor sleep quality was higher in pregnant women in the third trimester, especially those over the age of 30, living in a large family, having a high number of pregnancies and children, having a disease accompanying pregnancy, and getting pregnant unplanned. found that the rate of poor sleep quality was higher [18]. On the contrary, in our study, sleep quality was found to be worse in young people, when the number of people living in the household decreased, in those with higher education levels and in pregnant women with gender expectations. This difference in our study may be due to the fact that most of our pregnant women are not working despite their advanced education level and individual stress factors. As a matter of fact, although it did not cause a statistically significant difference in the study of Ertekin et al., an increase in perceived stress and deterioration in sleep quality were observed with the increase in the education level of pregnant women. In addition, a positive and significant relationship was found between the poor sleep quality of pregnant women and the stress they perceived [17]. The good sleep quality of pregnant women who felt socially supported in our study also supports this finding. Social support reduces the level of anxiety and stress; It can increase the power to combat ambivalent emotions and the adaptation to the pregnancy process, and facilitate the adaptation to the role of motherhood [19]. The social support that a woman will receive from the people she loves, increases her emotional and cognitive motivation, and accordingly, it allows a more harmonious pregnancy process without being unduly affected by some negative changes that pregnancy may cause [20-25].

Shepherd et al. found a positive correlation between sleep disturbance of pregnant women, general fatigue, and being affected by daily activities [16]. In another study, it was stated that some usual complaints during pregnancy impair sleep quality, and considering the importance of sleep and rest in this period, it is necessary to raise awareness of pregnant women about sleep and sleep disorders and to develop their behaviors for sleep hygiene [26]. Neau et al. showed in their study that 72% of women experienced frequent waking problems in the last stages of pregnancy, this problem was mostly caused by frequent urination, and leg cramps, back pain and reflux negatively affected sleep quality [27]. Lee and Gay followed 131 pregnant women and reported negative obstetric outcomes in pregnant women who slept poorly in the third trimester. They observed that delivery took longer and cesarean rates were higher in pregnant women who slept less than 6 hours a day [28]. Similarly, Beebe and Lee emphasized that women who sleep poorly during pregnancy have negative birth outcomes, and their fatigue and pain levels are high [29]. Demirbaş et al. found that women with a high level of education, active working life, and voluntarily conceived were more compatible with pregnancy, and that obtaining information about pregnancy was a factor affecting compliance with pregnancy in the prenatal period [24]. In our study, it was observed that musculoskeletal pain, discomfort, frequent urination, swelling in the feet, pain/cramp in the legs and burning in the stomach were more common in pregnant women with poor sleep quality.

Conclusion

In our study, pregnancy-related features such as the progression of the week of gestation, excess weight gain, and physical complaints during pregnancy were found to be factors affecting sleep quality. About half of our pregnant women had poor sleep quality. It may be beneficial for physicians dealing with pregnant women to evaluate this issue in their daily practices, to question sleep problems, and to make necessary referrals and care plans.

Sleep problems are multifactorial and can appear in different ways. Therefore, sleep-related problems should be handled in a multi-faceted manner. In our study, the effects of shortening sleep duration, difficulty in falling asleep, frequent sleep interruptions, difficulty falling back, not waking up easily in the morning, and involuntary waking up very early on sleep quality were found to be significant. All pregnant women should be informed about sleep hygiene, such as going to bed at the same time, not sleeping during the day or taking short naps, not going to bed before sleep and tired, getting up at the same time every morning, and not going back to sleep after waking up in order to rest a little more. Considering the relationship between physical and mental health and sleep quality, physical exercise can help reduce pain complaints and control weight. Feeling socially supported improves sleep quality.

The first data of this study were presented as an oral presentation at the "5th International Congress of Health Sciences and Family Medicine 2020" on 06.02.2020 as a preliminary study.

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