

Conceiving During the COVID-19 Pandemic: Assessing Quality of Life and Perceived Stress Status

COVID-19 Pandemi Döneminde Gebe Olmak: Yaşam Kalitesi ve Algıladıkları Stres Durumunun Değerlendirilmesi

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ABSTRACT

Objective: This descriptive and cross-sectional study was conducted online to determine the quality of life and stress level experienced by pregnant women during the Coronavirus disease-2019 pandemic.

Methods: The sample of the study consisted of 189 pregnant women. Personal Information Form, Perceived Stress Scale (PSS) and SF-36 Quality of Life Scale were used to collect data. The data were collected through the social media groups created by the pregnant women after obtaining permission from the group administrators.

Results: It was found in the study that the variables affecting the PSS score were especially age and the region of residence and the changes in other socio-demographic findings, obstetric characteristics and income did not make a significant difference in the PSS score.

Conclusion: The study emphasized the importance of investigating the effects of socio-demographic, socio-economic, and obstetric variables on quality of life and perceived stress level.

Keywords: COVID-19, pregnancy, perceived stress, quality of life

ÖZ

Amaç: Tanımlayıcı ve kesitsel tipteki bu araştırma, Koronavirüs hastalığı-2019 pandemi döneminde gebelerin yaşadığı yaşam kalitesi ve stres düzeyinin belirlenmesi amacıyla çevrimiçi ortamda yürütüldü.

Yöntem: Araştırmanın örneklemini 18 yaşından büyük, yüksek riskli gebe olmayan, aktif gebeliği bulunan, Türkçe okuma yazma bilen ve araştırmaya katılmayı kabul eden gebeler arasından, 189 gebe oluşturdu. Verilerin toplanmasında Birey Tanıma Formu, Algılanan Stres Ölçeği (ASÖ) ve SF-36 Yaşam Kalitesi Ölçeği kullanıldı. Veriler gebelerin oluşturduğu sosyal medya grupları aracılığıyla grup yöneticilerinden izin alındıktan sonra toplandı.

Bulgular: Çalışmada ASÖ puanını etkileyen değişkenlerin özellikle yaş ve yaşanılan bölge olduğu, diğer sosyo-demografik bulgular ile obstetrik özellikler ve gelir durumundaki değişikliğin ASÖ puanında anlamlı bir fark yaratmadığı görüldü.

Sonuç: Çalışma sonucunda bulguların, sosyo-demografik, sosyo-ekonomik ve obstetrik değişkenlerin yaşam kalitesine ve algılanan stres düzeyine etkisinin incelenmesinin önemi vurgulandı.

Anahtar Kelimeler: COVID-19, gebelik, algılanan stres, yaşam kalitesi

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INTRODUCTION

During pregnancy, women tend to experience major emotional changes and mental health problems, along with frequent fatigue and physical discomfort.¹ Psychological problems are reported to be common in pregnant women and the prevalence of these problems is higher than the general adult population.² The most common of these psychological problems is stress. Woods et al.³ (2009) reported this rate as 84%. Studies have shown that experiencing one or more psychological disturbances during pregnancy, related to depression, quality of life, anxiety, or perceived stress, is associated with an increased overall risk of prematurity.^{1,4,5} Experiencing a natural disaster or emergency during pregnancy causes negative mother-infant relationship such as premature birth, low birth weight, slowdown in infant development and mood disorders.⁶⁻¹⁰

The World Health Organization (WHO) declared the Coronavirus disease-2019 (COVID-19) outbreak a pandemic on March 11, 2020.¹¹ COVID-19, a public health crisis, creates anxiety and psychological effects on people.¹² Studies have shown that epidemics impact people's mental health, can cause new psychiatric symptoms or aggravate previous mental illnesses.¹³ Pregnant women are at a potentially high risk of adverse outcomes during the pandemic due to increased pregnancy-specific concerns.¹⁴ The general population experience most of the concerns regarding the psychological effects of the COVID-19 pandemic.¹⁵⁻¹⁸ Pregnant women are considered as a uniquely vulnerable group due to their at-risk immunological functions, altered physiology, and susceptibility to infections.¹⁹ Psychological disorders, which are prevalent during pregnancy, may increase with major events such as health crises and natural disasters.²⁰

When the deterioration of psycho-social health during pregnancy continues in the postpartum period, the risk of adverse effects in the child's future increases. These negative effects include problems in establishing a bond between the mother and the infant, retardation in growth, delay in motor and language development, emotional development disorders and behavioral problems.²¹ So, it is critical to identify the psychological changes of the mother during pregnancy and to protect her well-being and the physiological changes.²²

Therefore, this study will contribute to the literature on identifying the stress and quality of life perceived by pregnant women during COVID-19 pandemic. Additionally, the obtained data will shed light on future studies by bringing a new perspective on the holistic care of pregnant women.

METHODS

The universe in this descriptive and cross-sectional research consisted of pregnant women with active pregnancy during the COVID-19 pandemic. The sample consisted of pregnant women who agreed to participate in the study between June and September 2020, who were older than 18 years old, without high-risk pregnancies, who had active pregnancy and who could read and write in Turkish. Sample calculation was not used in determining the sample size. Research data were collected online because of the declaration of a pandemic by the WHO in March 2020. The sample of the study consisted of 189 pregnant women. To collect data online, permission was obtained from the administrators of the social media groups created by the pregnant women and the questionnaire forms were shared in these groups. Pregnant women who agreed to participate in the study were asked to fill in the Personal Information Form, Perceived Stress Scale (PSS) and Short Form-36 (SF-36) Quality of Life Scale.

For the study, approval was obtained from a state İzmir Bakırçay University Non-Interventional Clinical Research Ethics Committee (date: 19.06.2020, decision no: 03, research no: 30) and the study was conducted on social media. Consent was obtained from the pregnant women included in the study. Additionally, permission was obtained from the Scientific Research Platform of the Ministry of Health to conduct the study.

Measures

Personal Information Form, PSS and SF-36 Quality of Life Scale were used to collect research data.

The Personal Information Form included questions about the socio-demographic characteristics (age, educational status, obstetric history, place of residence) of pregnant women who participated in the study.

PSS was developed by Cohen et al. (1983).²³ Consisting of 14 items, the PSS was designed to measure how stressful some situations are perceived in one's life. Participants rank each item on a 5-point Likert-type scale ranging from "Never (0)" to "Very often (4)." Seven of the items with positive statements were scored in reverse. PSS-14 scores range from 0 to 56 and a high score indicates an excess of stress perception. The scale has 2 sub-dimensions: insufficient self-efficacy and perception of stress/discomfort. The Turkish reliability and validity study of the PSS was conducted by Eskin et al.²⁴

SF-36 Quality of Life Scale was developed and introduced by Rand Corporation in 1992 to assess the state of two main aspects of health: Physical and mental. The scale consists of 36 items and measures 8 dimensions: Physical functioning (10 items), social functioning (2 items), role

limitations (physical) (4 items), role limitations (emotional) (3 items), mental health (5 items), energy/vitality (4 items), bodily pain (2 items) and general health perceptions (5 items). The items were ranked with a Likert type scale (3 and 6 points) other than Items 4 and 5, which are answered as yes or no.²⁵ The sections assessing physical and mental health are separately scored from 0 to 100, with lower scores representing severe impairment and higher scores representing better quality of life functions. The SF-36 Turkish reliability and validity study of SF-36 was performed by Koçyiğit et al.²⁶

Statistical Analysis

The data obtained from the research were analyzed using the Statistical Package for the Social Sciences for Windows 20.0 package program. Personal information about pregnant women was provided as numbers, percentages and means. Independent sample t-test, one-way ANOVA, and Spearman correlation analysis were used for variables with a normal distribution, while Mann-Whitney U test and Pearson correlation analysis were used for variables without normal distribution. $P < 0.05$ was considered statistically significant for all results.

RESULTS

The mean age of the pregnant women participating in the study was 29.62 ± 5.77 and the mean week of gestation was 27.02 ± 8.71 . Approximately half (42.3%) of the cases participating from every region of Turkey were between the ages of 26-30, 84.7% were high school graduates and 47.6% were not employed. Most pregnant women (77.2%) lived in a city center and half of the pregnant women (54.5%) assessed their income as being equal to their expenses. 91% of pregnant women did not have a chronic disease. Almost all the pregnant women (94.2%) did not smoke. The rate of pregnant women who reported experiencing constant anxiety was 16.4% and the rate of those who reported experiencing frequent anxiety was 40.7%. 55.6% of the pregnant women were multigravida and nearly half (46.6%) were nullipara 73% did not have a history of miscarriage. 73% of them had planned pregnancies and 61.9% were in their 3rd trimester and 33.9% were in their 2nd trimester.

The PSS scores of the participating pregnant women were 12.00 ± 2.34 (minimum: 4-maximum: 18) in the perceived stress sub-scale and 30.11 ± 5.84 (minimum: 11-maximum: 45) in perceived insufficient self-efficacy sub-scale with a mean total scale score of 42.11 ± 8.01 (minimum: 15-maximum: 62).

Physical functioning, role limitations (physical), bodily pain, general health perceptions, energy/vitality, social functioning, mental health and role limitations (emotional) scores of the pregnant women participating in the study according to the SF-36 Quality of Life Scale were as

follows: 37.06 ± 25.26 , 35.31 ± 25.77 , respectively, 65.56 ± 19.96 , 60.58 ± 17.40 , 53.57 ± 19.11 , 49.40 ± 25.63 , 35.62 ± 45.22 , and 59.23 ± 18.83 .

The comparison of the socio-economic status of the pregnant women and the SF-36 Quality of Life Scale scores shows that the physical health score was lower in the group aged 35 and older, the mental health score was lower in the 21-25 age group, but there was no statistically significant difference between them ($p > 0.05$). Based on the education levels of the participants, the physical health and mental health sub-dimension scores were lower in the group, which graduated from the primary school group and there was no statistically significant difference between them ($p > 0.05$). The status of employment did not make any difference according to the sub-dimensions of the quality-of-life scale ($p > 0.05$), on the other hand, the mean physical health score of pregnant women who received less income than their expenses was 43.25 ± 15.94 and the mean score of those who received more income than expenses was 55.10 ± 18.15 ; with a statistically significant difference between the two ($p = 0.013$).

Comparing the obstetric characteristics of the pregnant women with the SF-36 Quality of Life Scale scores shows that the physical health and mental health scores of those with their first pregnancy were higher than those of multigravidas and the difference between mental health and the number of pregnancies was statistically significant ($p = 0.037$). As the number of births increased, physical health and mental health scores also increased. A statistically significant difference was found between mental health and the number of births ($p = 0.001$) and the quality of life score of those with planned pregnancies was higher than those who did not plan their pregnancy, with a significant difference between mental health and planned pregnancy ($p = 0.046$). As the gestational weeks of the pregnant women increased, the mean quality of life score decreased, and there was a statistically significant difference between the mean mental health score and the trimesters ($p = 0.046$) (Table 1).

Comparison of the PSS scores and obstetric characteristics of the pregnant women demonstrates that the mean PSS score of nullipara women was higher than that of primipara and multipara, that the mean PSS total score decreased as the number of children increased, that the PSS mean total score of those with planned pregnancies was higher and that the PSS mean total score of those in the first trimester of pregnancy was higher than that of the pregnant women in 2nd and 3rd trimesters, although this difference was not statistically significant ($p > 0.05$) (Table 1).

It was concluded that only 3.4% of the pregnant women participating in the study had COVID-19 and 39.7% of them

had an acquaintance or a relative diagnosed with COVID-19. It was identified that the mental and physical health quality of life mean scores were lower in pregnant women who had the disease themselves or whose relatives were positive for COVID-19. There was a statistically significant difference between having the disease and mental health ($p \leq 0.05$), and having an acquaintance or a relative diagnosed with COVID-19 and mental health ($p = 0.000$) (Table 2), 46.6% of the women participating in the study reported a decrease in their income during COVID-19 Pandemic period. Those who reported a decrease in their income had lower SF-36 Quality of Life Scale Physical Health and Mental Health mean scores than those who stated that their income did not change (51.9%) or that their income increased (1.6%). The statistical analysis pointed to a statistically significant difference between these in both sub-dimensions (physical health $p = 0.023$; mental health $p = 0.001$) (Table 2).

When the PSS mean total score of the women participating in the study was compared with the factors related to their COVID-19 status, it was found that those who had COVID-19 and had acquaintances or relatives diagnosed with COVID-19 obtained higher PSS mean total scores with no statistically significant difference between them ($p > 0.05$) (Table 2).

Comparison of pregnant women's SF-36 Quality of Life Scale and PSS sub-dimensions and total scores with Pearson Correlation shows a weak, negative and significant relationship ($r = -0.153$, $p = 0.035$) between perceived

stress/distress and physical health component; a weak and significant relationship ($r = -0.265$, $p = 0.000$) between perceived insufficient self-efficacy and physical health component; a weak and significant relationship ($r = -0.229$, $p = 0.002$) between perceived insufficient self-efficacy and mental health and a weak and significant relationships ($r = -0.198$, $p = 0.006$) between PSS total score and physical health component (Table 3).

DISCUSSION

Despite intensive research on COVID-19 at this time of the pandemic, there are still many unknown aspects for pregnant women. Although reports from around the world suggest high symptoms of depression and anxiety among pregnant women during the COVID-19 pandemic, the exact prevalence and influencing factors are not fully known. This study, which was planned in line with this fact, investigated pregnancy-related issues during the COVID-19 pandemic and tried establishing the levels of perceived stress and quality of life.

As a main finding, it was reported that PSS mean total scale score was quite high in this study compared to the literature (42.11±8.01) although only 3.2% of the study participants had COVID-19. In their study in Iran, Masjoudi et al.²⁷ (2021) found the PSS mean score to be 31.16 [standard deviation (SD): 7.65]. A study conducted in China concluded similar to this study with a PSS mean score of 35.21 (SD: 7.58).²⁸ The studies conducted before the pandemic in Turkey

Table 1. Comparison of obstetric characteristics of pregnant women according to PSS and SF-36 scale

Characteristic	n	%	Physical	Mental	PSS
			Mean±SD	Mean±SD	Mean±SD
Number of pregnancy					
Primigravida	84	44.4	51.51±9.36	52.54±22.00	6.00±1.20
Multigravida	105	55.6	49.12±9.89	46.69±18.43	5.99±1.01
			0.453*	0.037*	0.377*
Number of births					
Nullipara	88	46.6	48.18±9.61	43.25±18.53	44.28±6.62
Primipara	70	37.0	47.43±9.94	50.92±17.81	41.66±8.35
Multipara	31	16.4	57.81±5.69	78.28±16.17	36.52±13.79
			0.47**	0.001**	0.149**
Number of children					
None	89	47.1	48.26±9.69	43.64±18.50	43.10±7.88
1	71	37.6	48.37±10.34	52.70±18.43	43.95±7.21
2 or more	29	15.3	58.43±3.09	88.45±5.00	41.14±9.52
			0.164**	0.001**	0.47**
Planned pregnancy					
Yes	138	73.0	51.20±9.76	51.34±21.00	38.36±25.59
No	51	27.0	45.37±7.92	44.35±17.59	33.52±24.23
			0.154**	0.046*	0.244*
Pregnancy/weeks					
12 weeks or less	8	4.2	52.50±12.08	53.65±20.79	47.25±4.89
13- 24 weeks	64	33.9	51.45±8.95	54.18±21.13	42.42±10.14
25-40 weeks	117	61.9	48.44±9.71	46.59±19.48	43.23±6.43
			0.091**	0.046**	0.256**

*Student's t-test, **One-way ANOVA.

SD: Standard deviation, PSS: Perceived Stress Scale, SF-36: Short Form-36

Table 2. Comparison of pregnant women’s COVID-19 factors according to PSS and SF-36 scale

Factor	n	%	Physical	Mental	PSS
			Mean±SD	Mean±SD	Mean±SD
Diagnosed with COVID-19					
No	183	96.8	49.73±9.50	49.73±20.54	42.98±7.90
Yes	6	3.2	46.56±13.85 0.211*	41.20±9.93 0.040*	47.66±5.00 0.344*
COVID-19 in a relative					
No	114	60.3	51.22±9.52	52.43±21.97	42.31±8.53
Yes	75	39.7	47.20±9.35 0.744*	44.93±16.69 0.000**	44.37±6.57 0.059*
Change in income					
No, there was no change.	98	51.9	49.81±10.16	54.66±21.04	43.84±7.57
Yes, my income has decreased.	88	46.6	48.94±8.60	43.50±17.52	42.36±8.05
Yes, my income has increased.	3	1.6	63.95±12.62 0.028**	54.16±33.35 0.001**	42.33±12.50 0.434**
Change in routine checks					
No	54	28.6	50.29±10.14	46.64±19.64	43.20±7.88
Yes	135	71.4	48.12±8.63 0.082*	52.48±20.65 0.453*	42.55±7.85 0.564*
Failure to have screening tests					
No	169	89.4	50.16±9.56	49.17±20.55	43.20±7.88
Yes	20	10.6	47.97±9.38 0.437*	51.46±21.00 0.780*	42.55±7.85 0.79*

*Student’s t-test, **One-way ANOVA.
 COVID-19: Coronavirus disease-2019, SD: Standard deviation, PSS: Perceived Stress Scale, SF-36: Short Form-36

had similar findings to this study and the perceived stress level during pregnancy was found to be 42.62±5.01 in the studies of Alkin and Beydağ²⁹ with women with three or more pregnancies before the pandemic (2018). These results show that the perceived stress of pregnant women in Turkey is generally high.

This study concluded that the PSS score was lower in the 21-25 age group with a highly significant statistical difference between the age groups (p=0.000) while education status, employment status and income status did not make any difference in the PSS total score. Similar to the current study, Ceulemans et al.³⁰ (2021) also reported that the level of stress decreased with age. Unlike our study, Jiang et al.²⁸ revealed that age did not make a difference in stress levels and education status and employment status were the socio-demographic variables that affected the PSS scores the most. This result shows that the level of stress differs according to country and place of residence, because in this study, the PSS mean total score of the pregnant women residing in the city center was higher than those living in the districts and villages, with a statistically significant difference (p=0.000). Likewise, a study by Jiang et al.²⁸ during the pandemic reported that those living in urban areas had higher perceived stress than those living in rural areas. This result may be related to experiencing higher levels of stress by pregnant women in relation to a higher chance of infection with the virus due to the larger population sizes in the city centers. This study found that education status, employment status and income status did not make any difference in the PSS total score. However, Jiang et al.²⁸ reported that the stress score increased as the

Table 3. PSS and SF-36 correlation

PSS	Analysis	Physical health	Mental health
Perceived stress/distress	r p	-0.153 0.035	-0.090 0.216
Perceived insufficient self-efficacy	r p	-0.265 0.000	-0.229 0.002
PSS total	r p	-0.198 0.006	-0.132 0.070

r: Pearson correlation, PSS: Perceived Stress Scale, SF-36: Short Form-36

education level increased. In this study, most women had high perceived stress scores, suggesting that this difference did not make a significant difference.

Kuppermann et al.³¹ (2021) evaluated perceived stress among low-income pregnant women and found that obstetrical characteristics such as gestational week and parity number affected the perceived stress score, however, in the president study, gestational week, parity and gravida did not affect the perceived stress score. Contrary to this finding, obstetric characteristics affect the perceived stress level in studies conducted before the COVID-19 epidemic.³² Hence, the finding that the variables whose effects have been previously demonstrated do not affect perceived stress anymore may just be an indicator of how much stress this epidemic, which is new for the whole world, has created on pregnant women. Again, the comparison of COVID-19 status factors and PSS scores shows no difference between the groups and this finding may be closely related to the high PSS mean scores in all groups.

Medina-Jimenez et al.³³ (2021) found a significant increase in stress levels in the last trimester of pregnancy compared to the first trimester. However, in this study, the stress score in the last 3 months of pregnancy was lower compared to the stress score in the first trimester. The reason for this result may be the low number of pregnant women in the first trimester (n=8).

The significant decrease in the physical and mental health component scores of the SF-36 Quality of Life Scale for pregnant women whose incomes decreased due to COVID-19 epidemic is another striking finding. The physical health component score was 49.62 (± 9.63), and the mental health component score was 49.46 (± 20.33) in this study. In their study with pregnant women mostly living in the USA and Ireland, Pope et al.³⁴ (2021) obtained much lower scores compared to our study: The physical health component score, 44.25 (± 9.17) and the mental health component score, 42.49 (± 11.30), respectively. In a study conducted in Iran, the physical health component score was found to be 69.95 \pm 12.62, and the mental health component score was 67.31 \pm 13.53, pointing to higher scores compared to this study.³⁵ Hence, the region and/or country of residence affects the quality of life.

According to this study, while the number of births and the number of children did not make a difference in the physical health component for pregnant women, these factors somehow affected their mental health component score. This result was an indication that the quality of life scores increased as the experience of pregnant women increased. Again, the mental components of the quality of life of pregnant women in the third trimester were significantly lower during the pandemic. The unpredictable future due to the approaching birth and the fear of the baby's health was considered as the possible reasons for this outcome. The study results followed findings reported by Lau and Yin³² (2011), who investigated mental health and quality of life in Hong Kong residents during the Severe acute respiratory syndrome outbreak.

It was found that the decrease in income during the pandemic period negatively affected both physical and mental health components of the study sample. As in the whole world, the economic problems experienced in Turkey appeared as a variable that reduced the quality of life for pregnant women. This finding once again emphasizes the necessity that countries should be ready economically for possible epidemics.

The significant point regarding the income status is related to the fact that while almost half of the women (46.6%) stated that their income status decreased due to COVID-19, the decrease in income status did not change their stress levels, contrary to the limited number of studies³⁶ which

investigated such relationships. Since income status is an important variable to be considered for future studies, the reason why pregnant women who experienced income loss had no change in their stress levels should be questioned in more detail.

It was concluded that as the participating pregnant women's perceived stress score increased, their SF-36 quality of life physical and mental health component scores decreased and there was a significant difference between perceived stress and the physical health component. This result, which is similar to the literature,³⁴⁻³⁷ once again demonstrated the importance of managing the stress experienced by pregnant women.

Study Limitations

Since this study was conducted in an online environment, the women who did not use the internet and social media were excluded and this fact is considered a limitation in terms of adequate representation of the sample. This limitation may reduce the generalizability of the results. However, the study findings provide important insights into the impact of the epidemic on pregnant women and provide a compelling basis for further systematic research in this area.

Studies that thoroughly investigate women who experience economic difficulties are critical in this sense. The adverse effects and inequalities related to both stress and quality of life have increased with the pandemic. More studies are needed to evaluate the maternal and fetal risks that may occur because of the pandemic and its negative effects.

CONCLUSION

This study contributes to our understanding of the perceived stress, quality of life and relevant factors that affect pregnant women during COVID-19 pandemic. Providing information about which pregnant women are more stressed and that pregnant women have a lower quality of life is of critical importance for the health of pregnant women and the infants during the pandemic that affects the whole world and includes global challenges. The study findings emphasize the importance of examining the effects of socio-demographic, socio-economic, and obstetric variables on quality of life and perceived stress levels.

The studies conducted in Turkey reported quite high PSS scores compared to the literature. More studies should be conducted and these issues should be investigated in depth to conclude whether perceived stress is related to pregnant women's individual obstetric characteristics or it is related to environmental, social and political reasons. Stress experienced during pregnancy affects birth and

neonatal outcomes. Therefore, support services should be strengthened to relieve the stress experienced by pregnant women. Specific information targeting pregnant women should be provided through both health institutions and social media platforms. Such services can be an effective way to alleviate difficulties and provide epidemic preparedness and medical response. Nurses, one of the occupational groups that will provide this service, should design training programs for stress management during pregnancy and provide relaxation training to reduce perceived stress. Information packages should be prepared and used in training. This training will not only benefit women but also their families.

In this study, the PSS score was found to be higher than almost all studies conducted before and during the pandemic. Therefore, the findings should be interpreted with caution. To better understand the mechanisms that determine maternal stress perceptions, further studies are needed on the psychological and sociological underpinnings of activity during pregnancy.

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Ethics

Ethics Committee Approval: The study were approved by the İzmir Bakırçay University of Local Ethics Committee date: 19.06.2020, decision no: 03, research no: 30).

Informed Consent: Consent form was filled out by all participants.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Concept: S.Ç., G.K., Design: S.Ç., Data Collection or Processing: S.Ç., G.K., Analysis or Interpretation: S.Ç., G.K., Literature Search: S.Ç., G.K., Writing: S.Ç., G.K.

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