

Investigation of the Effect of Physical Activity Level on Fear of Birth and Quality of Life During Pregnancy

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ABSTRACT

Purpose: Although the importance of physical activity in every period of life is known, it may decrease depending on the changes during pregnancy. This study aims to understand how physical activity levels, quality of life, and fear of childbirth are affected during pregnancy and to emphasize the importance of physical activity levels during pregnancy.

Methods: Our study's population was planned as a cross-sectional study of pregnant women who applied to the Physiofit wellness center. The sample consists of 84 volunteer pregnant women participating in the study. Physical activity levels; with the Pregnancy Physical Activity Questionnaire (PPAQ), quality of life; with the Short Form-36 (SF-36), fear of birth level; with Wijma Delivery Expectancy/Experience Questionnaire A (WDEQ-A) were evaluated.

Results: It was determined that the total PPAQ score median of pregnant women was 141.27. PPAQ sub-parameter scores were correlated with almost all sub-parameter scores of SF-36 ($p < 0.05$). In comparison with the quality of life, the highest correlation was observed in moderate intensity and sports/exercise type physical activities ($p < 0.05$), no correlation was observed between the sedentary physical activity sub-parameter and any quality of life sub-parameter ($p > 0.05$). A negative and significant correlation was observed between all sub-parameters of physical activity except sedentary-intensity and Household/care-type sub-parameter and WDEQ-A total score ($p < 0.05$).

Conclusion: As a result, it was observed that women's quality of life decreases, and their fear of childbirth increases with the inadequacy of physical activity levels during pregnancy.

Keywords: Fear of Birth, Quality of Life, Physical Activity, Pregnancy.

Gebelikte Fiziksel Aktivite Düzeyinin Doğum Korkusu ve Yaşam Kalitesine Etkisinin İncelenmesi

ÖZET

Amaç: Fiziksel aktivitenin hayatın her dönemindeki önemi bilinmesine rağmen gebelik dönemindeki değişimlere bağlı olarak azalabilir. Bu çalışma gebelikte fiziksel aktivite düzeylerinin, yaşam kalitesinin ve doğum korkusunun nasıl etkilendiğini anlamayı ve gebelikte fiziksel aktivite düzeylerinin önemini vurgulamayı amaçlamaktadır.

Metod: Çalışmamızın popülasyonunu Fizyofit sağlıklı yaşam merkezine başvuran gebeler, örneklemini ise araştırmaya katılan gönüllü 84 gebe oluşturmuştur. Gebelerin fiziksel aktivite seviyeleri Gebelik Fiziksel Aktivite Anketi (GFAA) ile yaşam kaliteleri Kısa Form-36 (KF-36) ile doğum korkusu düzeyleri Wijma Doğum Beklentisi/Deneyim Anketi A (WDBÖ-A) ile değerlendirildi.

Sonuçlar: Gebelerin toplam GFAA puan ortalamalarının 141.27 olduğu belirlendi. GFAA alt parametre puanları, KF-36'nın hemen hemen tüm alt parametre puanları ile korele idi ($p < 0.05$). Yaşam kalitesi ile karşılaştırıldığında, en yüksek korelasyon orta şiddette ve spor/egzersiz türü fiziksel aktivitelerde gözlenirken ($p < 0.05$), sedanter fiziksel aktivite alt parametresi ile herhangi bir yaşam kalitesi alt parametresi arasında korelasyon gözlenmedi ($p > 0.05$). Fiziksel aktivitenin sedanter-yoğunluk ve Ev/bakım tipi alt parametresi dışındaki tüm alt parametreleri ile WDBÖ-A toplam puanı arasında negatif ve anlamlı bir korelasyon gözlendi ($p < 0.05$).

Tartışma: Sonuç olarak, gebelikte fiziksel aktivite düzeylerinin yetersizliği ile birlikte kadınların yaşam kalitelerinin düştüğü, doğum korkularının arttığı görüldü.

Anahtar Kelimeler: Doğum Korkusu, Yaşam Kalitesi, Fiziksel Aktivite, Gebelik.

With the modernization of daily life, the decrease in physical activity levels and the increasing stress levels of individuals cause adverse effects on general health in the whole population (1). The necessity of doing enough physical activity to reduce these adverse effects and improve health has been shown in many studies. It is known that regular physical activity has positive effects on psychological functionality as well as general health (2).

Pregnancy, a transitional period for women, is when frequent physical and emotional changes are experienced (3). A direct relationship exists between maintaining physical fitness during pregnancy, managing weight gain, reducing the risks of gestational diabetes, preeclampsia, hypertension, and prenatal depression, and improving psychological well-being and regular physical activity. In epidemiological studies, it has been reported that women who are active during their pregnancy have a lower risk of developing physical problems and are in a better situation in terms of adaptation to changes in pregnancy. It is emphasized that physically active women's maternal and child health are positively affected during pregnancy (4). The published guide stated that pregnant women should do moderate-intensity exercise for at least half an hour every day of the week, and women who were active before pregnancy could maintain their lifestyles (5). Despite the reported benefits of regular physical activity, the level of physical activity in women is lower than in men, especially during pregnancy. Problems during pregnancy can further increase physical activity restriction, which may increase gradually in the later stages. In addition, pregnant women may think that physical exercises may affect the fetus's health and reduce their physical activities. Many pregnant women may be concerned about the potential harm of physical activity to the fetus (6). As with hormonal and physiological changes, the source of psychological changes during pregnancy is the fetus, which tries to complete it during this period. However, in most women, some mental changes can be seen, which can occur in different periods of pregnancy, such as mild, moderate, and severe. These mood changes can cause conflict, anxiety, introversion, uncertainty, and fear. Fear affects women negatively during the last pregnancy period (4).

Fear of childbirth is a common clinical problem. Almost all women can be afraid of birth. Especially in the last trimester, baby-protective approaches predominate. Negative thoughts experienced with the delivery approach can further confuse pregnant women's minds and increase their fear of childbirth. These fears affect daily life by increasing

stress and triggering the stress-fear cycle, and can impair quality of life. Concerns in this process; can cause anxiety and depression and negatively affect the postpartum period. All of these can affect the healthy progression of pregnancy (7). Therefore, the pregnant woman should have a healthy, peaceful, and happy pregnancy period for herself and her fetus (8).

Many studies examined the effects of physical activity levels during pregnancy on the quality of life of pregnant women (4,9). These studies emphasized that physical activity positively contributed to the pregnant's quality of life and mental state. However, the standard limitation of these studies is that pregnancy-specific measurement methods were not used. In addition, only two studies (10,11) evaluate the relationship between fear of childbirth and physical activity level which is necessary for maternal and child health during and after pregnancy. The most important limitations of these studies are that the scales used are non-standardized. This study aims to understand how the physical activity levels of pregnant women affect their fear of birth and their quality of life and to emphasize the importance of interventions to increase physical activity levels, especially by drawing attention to the adverse effects of decreased physical activity in pregnant women.

METHODS

Study Design and Population

84 volunteer pregnant women who applied to Physiofit wellness center between 01/08/2022 and 01/09/2022 were included in our cross-sectional study. Ethics committee approval was obtained from the Ankara Medipol University Non-Interventional Clinical Research Ethics Committee before starting the study (Date: 18/07/2022 Decision No: 0133). The study was conducted by the Helsinki Principles. The inclusion criteria were between 24 and 36 weeks, aged between 20 and 35 years, single baby pregnancy, and accepting to be included in the study. Women with multiple pregnancies, having a history of miscarriage before conception, and chronic diseases such as hemodynamically significant heart disease, restrictive lung diseases, diabetes, and hypertension were excluded from the study. In the power analysis performed to determine the sample size, it was determined that 84 people were needed for the correlation analysis to be completed by taking the Pearson correlation coefficient $r = .30$ with 80% power ($\alpha = .05$, bidirectional) in the G*power program. Before the study, the participants were informed,

and their consent was obtained for their participation in the study.

Measuring Methods

Demographic information, such as the participant's age, height, and weight, was obtained. In addition, physical activity levels, fear of childbirth, and quality of life were evaluated with data collection forms.

The Pregnancy Physical Activity Questionnaire (PPAQ) (12), which is widely used to evaluate the physical activity levels of pregnant women, is semi-quantitative and takes an average of 15 minutes to fill out. There are 32 activities, including 12 Home/care activities, 5 occupational activities, 9 sports/exercise, 3 transportation activities, and 3 inactivity activities. Participants are asked to choose the category of the amount spent for each activity in their trimester. From the PPAQ, the number of hours spent in each activity was multiplied by the activity intensity to arrive at a measure of average daily energy expenditure (MET-hours per day) attributable to each activity. Activities were categorized by intensity (i.e., light, moderate, vigorous), type (i.e., household, occupation, sport), or as total activity (sum of all intensity and type scores). Our study used the Turkish version of PPAQ (13).

SF-36 is a measurement tool capable of determining patients' general health status, and daily activity and working dynamics in the previous four weeks, and also capable of evaluating their emotional status. It was first developed by Ware and Sherbourne in 1992 (14), and was adapted into Turkish by Kocyigit et al. (15). Turkish version of SF-36 was used in our study. SF-36 generates eight subscales - general health, physical functioning, role limitations due to physical health, role limitations due to emotional problems, social functioning, body pain, vitality, and mental health. These were all scored between 0 and 100 and were subjected to statistical analysis. While the minimum score to be taken from the scale is 0, and the maximum score is 100, high scores indicate good quality of life. While the original SF-36 Cronbach α was > 0.85 , the Cronbach α value of our study was 0.88. The average time to complete the questionnaire is 10 minutes.

The Turkish version of the Wijma Birth Expectation/Experience Questionnaire (W-DEQ), which was validated by Körükcü et al., was used to assess the participants' fear of birth (16). The 33-item questionnaire measures women's expectations before birth (version A), experiences after birth (version B), and their fear of childbirth (17). The

score that can be obtained from each question in a Likert-type scale ranges from 0 to 5. While the minimum score to be taken from the questionnaire is 0, and the maximum score is 165, an increase in the score obtained means an increase in the level of fear. The average time to complete the questionnaire is 10 minutes. The original W-DEQ, Cronbach $\alpha > 0.87$ in Swedish pregnant women reported that the Cronbach α of our study was 0.82.

Statistical Analysis

"Statistical Package for Social Sciences" (SPSS) version 26.0 (SPSS inc., Chicago, IL, USA) was used for statistical analysis in the study. $p < 0.05$ was accepted as the statistical significance level. Visual (histogram, probability graphs) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk's test) were used to define whether the variables were normally distributed or not. Numerical variables with normal distribution are shown as mean \pm standard deviation. Non-normally distributed variables were represented by the median (IQR). Since at least one data was not normally distributed, the relationship between the PPAQ questionnaire and the SF-36 and WDEQ was evaluated with Spearman Correlation Analysis. Correlation coefficient 0.05-0.30 low, 0.30-0.40 low-moderate, 0.40-0.60 moderate, 0.60-0.70 good, 0.70-0.75 strong, and 0.75-1.00 rated as very strong (18).

RESULTS

Age, height, weight, BMI, education level, and trimesters of 84 postpartum volunteer women included in the study are given in Table 1.

The total PPAQ score, physical activity sub-parameter scores, short form-36 sub-parameter scores, and WDEQ-A total scores of the pregnant women are shown in Table 2.

When the relationship between physical activity and quality of life is examined, a positive, moderately significant correlation was found between total activity and Physical functioning, Role limitations (physical), Vitality, Social functioning, and General health perception scores ($r = 0.40-0.60$, $p < 0.05$) (Table 3), while a positive low significant relationship was found between Role limitations (emotional), Mental health, and Pain ($r = 0.05-0.30$, $p < 0.05$) (Table 3). A positive low significant relationship was found between Light activity and Physical functioning, Role limitations (physical), Role limitations (emotional), and General health perception ($r = 0.05-0.30$, $p < 0.05$) (Table 3).

Table 1. Demographics of pregnant women			
		Pregnant Women (n=84)	
		X ± SD	
Age (years)		27.14±1.86	
Height (cm)		168.15±3.89	
Weight (kg)		69.18 ±6.76	
BMI (kg / cm ²)		25.19±3.24	
		n	%
Education level	Primary School	6	7,15
	High School	14	16,66
	University	56	66,66
	Master's Degree	8	9,53
Pregnancy Period	2nd trimester	40	47,61
	3rd trimester	44	52,39

X ± SD: mean ± standard deviation, cm: centimeters, kg: kilograms, BMI: body mass index

Table 2. Physical activity, quality of life and fear of birth measurement results of pregnant women	
Pregnant Women (n=84)	
Pregnancy Physical Activity Questionnaire, Median (IQR)	
Total activity ²	141.27 (41.55-309.87)
Activity intensity	
Sedentary (<1.5 METs) ²	39.62 (6.92-141.1)
Light (1.5≤3.0 METs) ²	67.31 (6.63-139.78)
Moderate activity (3.0–6.0 METs) ²	21.13 (7.12-162.61)
Vigorous activity (>6.0 METs) ²	0 (0-12.55)
Activity Type	
Household/caregiving ²	64.30 (20.8-156.6)
Occupational activity ²	0 (0-61.20)
Sports/exercise ²	12.2 (2-40.8)
SHORT FORM-36 (0-100), Median (IQR)	
Physical functioning ²	85 (75-95)
Role limitations (physical problems) ²	85 (50-100)
Role limitations (emotional problems) ²	80 (33.3-100)
Vitality ²	60 (50-65)
Mental health ²	76 (64-80)
Social functioning ²	75 (50-100)
Pain ²	77.5 (45-90)
General health perception ²	70 (55-80)
WDEQ-A (0-165), X ± SD	
Total WDEQ Score ¹	56.89 ± 11.23

**p < 0.05, ¹: Data are expressed as X±SD, X ± SD: mean ± standard deviation, ²: Data are presented as median (IQR), WDEQ-A: Wijma delivery expectancy/experience questionnaire version a, MET: metabolic energy turnover*

There was a moderately significant positive relationship between Moderate activity and Physical functioning, Role limitations (physical), Role limitations (emotional), Vitality, Mental health, Social functioning, and General health perception (r= 0.40-0.60, p<0.05) (Table 3), while a positive low significant relationship was found with pain (r= 0.05-0.30, p<0.05) (Table 3). While a positive low-moderate significant relationship was found between Vigorous activity and Physical functioning, Role limitations (physical), and Social functioning (r= 0.30-0.40, p<0.05) (Table 3), a positive low-significant relationship was found between Mental health and General health perception (r= 0.05-0.30, p<0.05) (Table 3). A positive low significant relationship was found between Household/caregiving and Physical functioning and General health perception (r= 0.05-0.30, p<0.05) (Table 3). There was a moderately significant positive correlation between Occupational activity and Physical functioning, Role limitations (physical), pain, and General health perception (r= 0.40-0.60, p<0.05) (Table 3). In contrast, a good significant positive correlation was found between Role limitations (emotional) and Vitality (r= 0.60-0.70, p<0.05) (Table 3). On the other hand, a strong and significant positive correlation was found between mental health, social functioning, and Occupational activity (r= 0.70-0.75, p<0.05) (Table 3). There was a very strong and positive relationship between Sports/ exercise and Physical functioning, Role limitations (physical), Role limitations (emotional), and Vitality (r= 0.75-1.00, p<0.05) (Table 3). A good significant positive relationship was found between Mental health, Social functioning, pain, and General health perception (r= 0.60-0.70, p<0.05) (Table 3).

When the relationship between physical activity and fear of childbirth is examined, A moderately significant negative correlation was found between Total activity and Occupational activity and Total WDEQ score (r= 0.40-0.60) (Table 4). A low significant negative correlation was found between Light and Moderate activity and Total WDEQ score (r= 0.05-0.30, p<0.05) (Table 4). A low-moderate significant negative correlation was found between vigorous activity and Total WDEQ score (r= 0.30-0.40, p<0.05) (Table 4). A good significant negative correlation was found between sports/exercise and Total WDEQ score (r= 0.60-0.70, p<0.05) (Table 4).

Table 3. The relationship between pregnant women's average physical activity and quality of life scores

		Pregnant Women (n=84)							
		Total activity	Sedentary	Light activity	Moderate activity	Vigorous activity	Household/caregiving	Occupational activity	Sports/exercise
Physical functioning	r	0.41	-0.02	0.21	0.44	0.32	0.13	0.45	0.76
	p	0.011*	0.54	0.01*	0.03*	0.044*	0.031*	0.03*	0.015*
Role limitations (physical)	r	0.47	0.11	0.29	0.46	0.39	0.02	0.56	0.81
	p	0.002*	0.54	0.014*	0.03*	0.047*	0.54	0.024*	0.011*
Role limitations (emotional)	r	0.28	0.05	0.22	0.40	0.26	-0.12	0.65	0.77
	p	0.01*	0.54	0.044*	0.036*	0.54	0.54	0.04*	0.02*
Vitality	r	0.48	0.16	0.11	0.54	-0.02	-0.04	0.63	0.75
	p	0.034*	0.54	0.54	0.04*	0.54	0.54	0.03*	0.01*
Mental health	r	0.24	-0.12	0.03	0.48	0.22	-0.11	0.71	0.68
	p	0.01*	0.54	0.54	0.033*	0.024*	0.54	0.01*	0.02*
Social functioning	r	0.51	-0.05	0.09	0.55	0.34	0.13	0.74	0.65
	p	0.01*	0.54	0.22	0.02*	0.01*	0.54	0.016*	0.03*
Pain	r	0.23	-0.02	0.02	0.17	-0.06	-0.07	0.41	0.60
	p	0.01*	0.54	0.54	0.032*	0.54	0.54	0.02*	0.01*
General health perception	r	0.42	0.07	0.27	0.49	0.12	0.26	0.54	0.61
	p	0.01*	0.54	0.01*	0.03*	0.017*	0.041*	0.04*	0.03*

*p < 0.05, r: correlation coefficient

Table 4. The relationship between pregnant women's average physical activity and fear of birth scores

	Pregnant Women (n=84)	
	W-DEQ A	
	r	P
Total activity	-0.43	0.04*
Sedentary	0.02	0.564
Light activity	-0.11	0.048*
Moderate activity	-0.23	0.019*
Vigorous activity	-0.37	0.011*
Household/caregiving	0.22	0.047
Occupational activity	-0.47	0.001*
Sports/exercise	-0.63	0.001*

*p < 0.05, WDEQ-A: Wijma delivery expectancy/experience questionnaire version a, MET: metabolic energy turnover, r: correlation coefficient.

DISCUSSION

This study showed that women's physical activity levels during pregnancy were insufficient, and their fear of birth and quality of life levels were adversely affected.

In our study, pregnant women's physical activity total score median was 141.27. Our study, the physical activity total score median of pregnant women was 141.27. In addition, it was determined that pregnant women mostly did light-intensity activities and primarily engaged in Household/caregiving-type activities. In studies similar to our research, it was determined that pregnant women generally do light-intensity activities and deal with housework/care work the most (19,20). Studies show that although it is known to protect health during pregnancy and reduce the risk of some problems, the amount of physical activity in women during pregnancy is insufficient (21). Additionally, studies show that a lack of physical activity during pregnancy leads to increased pain (22) and deterioration in sleep quality, especially mood disorders (23). The results of these studies emphasize the importance of physical activity during motherhood, which is one of the essential processes of life.

Similar to other studies, there was a correlation between the total activity score of physical activity and all sub-parameters of quality of life (19,24). It is known that the quality of life of physically active women during pregnancy is also positively affected. Our study observed the highest correlation between physical activity and quality of life between moderate-intensity and sports/exercise-type physical activities. In the published guidelines, the recommendation of moderate-intensity aerobic physical activities during pregnancy supports this result (6). Similar to other studies, no correlation was found in any of the sub-parameters of sedentary and quality of life (9,24). Studies have shown that being sedentary negatively affects the quality of life during pregnancy. As it is known, sedentary life negatively affects the whole life process, especially pregnancy. Studies have shown that many complications may occur during pregnancy with sedentariness, and the quality of life may decrease (25). Our study observed a correlation between low-intensity physical activity and physical and emotional role limitations of the quality of life. Also, a correlation was observed between moderate-intensity activity and all parameters. Low-intensity activity can be effective in pregnant women, especially in situations that limit them physically and emotionally. However, the intensity of activities may need to be slightly higher to increase the quality of life, especially in parameters such as vitality, social functioning, and mental health (26). However, moderate-intensity exercises recommended in the guidelines can ultimately affect the systems of individuals and improve all parameters of their quality of life (6). On the other hand, high-intensity activities can negatively affect individuals' emotional states and vitality and cause fatigue in pregnant women (27). Therefore, in our study, a relationship between quality of life parameters such as pain, vitality, mental health, and high-intensity physical activity may not have been observed. With household/caregiving, only the correlation of quality of life with physical functioning and general health perception was observed. Household/caregiving activities include low-intensity, non-regular physical activities. The difference between physical activity and exercise supports our results. The fact that people do routine household activities does not indicate that they are physically active enough. In addition, sedentary life brings with it many problems. All these prevent an individual's quality of life from increasing. One of the remarkable results is the exercise type Occupational activity, which has the highest correlation with mental health and social functioning sub-parameters. The fact that pregnant women feel competent not only in household chores but also in activities related to their profession and that they are doing their

jobs, in any case, made them feel more self-confident and competent and may have been influential in the emergence of these results. It is usual that physical activity in sports and exercise type strongly correlate with the quality of life in almost all parameters. Especially the pregnancy period is an opportunity for individuals to gain healthy habits. Pregnant women's exercise activities keep them physically and hormonally strong and play an essential role in increasing their quality of life (23). In general, in most studies conducted similar to our research, it was observed that physical activity positively affected the quality of life. Still, no significant relationship was found in a few studies (20,29). We think that is because the physical activity questionnaire used in these studies is not specific to pregnancy, and the pregnant women in these studies are mainly inactive.

Our study found pregnant women's total fear of labor score as 56.89 ± 11.23 . It is stated that the fear of childbirth is higher, especially in women who experienced their first pregnancy (7). The level of fear and stress due to the unknown is elevated in pregnant women who will give birth for the first time. In studies in the literature, fear of childbirth; has been said that it is affected by many individual and environmental variables such as socio-demographic, obstetric, and psycho-social factors and that there may be differences in the measurement results due to the sample diversity and the lack of social support received. Studies have found a significant relationship between fear of childbirth and depression and anxiety, albeit at different levels (29,30). Studies have stated that depression and anxiety can affect the quality of life of pregnant women.

Our study observed a negative correlation between physical activity total score and fear of childbirth. In addition, we found a relationship between all sub-parameters of physical activity and fear of childbirth, except for the sedentary and household/caregiving parameter. In particular, a good negative correlation was found between physical activity in the sports/exercise type and fear of childbirth. The results of the other two studies examining the effects of physical activity on fear of childbirth in the literature are similar to ours (10,11). However, the weakness of these studies is that physical activity was evaluated only verbally in one of these studies. The other research assessed the fear of childbirth with a questionnaire without standardized validity and reliability. Studies show that regular physical activity reduces depression levels in pregnant women and effectively manages stress and anxiety (6,22). In addition, the physiological benefits of physical activity in pregnant women also affect their mental health of

pregnant women. It makes pregnant women feel more comfortable and enables them to control their bodies and minds more easily. All these reasons may have been effective in these results.

One of the strengths of our study is that the questionnaires used to evaluate both physical activity and fear of childbirth are specific to the pregnancy period. The most important limitation of our study is that the measurement results were not analyzed according to the trimester of the pregnant woman in our study.

CONCLUSION

Our study states that women's quality of life decreases, and their fear of childbirth increases with the inadequacy of physical activity levels during pregnancy. Insufficient physical activity levels in pregnant women can decrease their satisfaction levels from life and negatively affect their fear of childbirth. These results may adversely affect the pregnancy process. Increasing the physical activity levels of women during pregnancy provides both the physiological benefits of physical activity in women and the motivational contribution provided by activity and mental relaxation. This will positively affect pregnant women's care and social and professional functions. Our study will guide the literature that directing pregnant women to physical activities is at least as necessary as other supports. In future studies, examining the effects of different types of physical activity on various factors in women during pregnancy is essential.

DECLARATIONS

Funding

None

Conflicts of Interest/ Competing Interests

None

Ethics Committee Approval

Ethics committee approval was obtained from the Ankara Medipol University Non-Interventional Clinical Research Ethics Committee before starting the study (Date: 18/07/2022 Decision No: 0133).

Availability of Data

Available upon request.

Authors' Contributions

HİB created the study idea, reached the individuals who participated, and brought it to the literature. MB organized

the study method, created evaluation forms, made necessary evaluations of the individuals for the study, collected the data, analyzed the data, entered it into the system, and brought them to the literature. Both authors have read and approved the final version of the manuscript.

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