

# How do social and spousal support influence postpartum depression?

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## ABSTRACT

**Objective:** Postpartum psychiatric morbidity is one of the most frequent complications of birth, cause of suicides and maternal death. We aimed to determine the prevalence of postpartum depression (PPD) among mothers who gave birth in the last 6 months and also assess the risk factors, particularly poor social and spousal support.

**Patients and Methods:** This is a cross-sectional study. We included 303 mothers who gave birth in the last 6 months attending three family health centers in a district of Istanbul. Stratified sampling method was used. Edinburgh Postpartum Depression Scale, Postpartum Support Scale, The Scale of Perceived Spousal Support Among Women in Early Postpartum Period were administered. Univariate and multivariate statistical analyses were used.

**Results:** Postpartum depression prevalence was 9.9% among the participants. According to multivariate statistical analysis; while a higher income (OR : 0.99) and a higher spousal support score (OR: 0.95) were found as protective factors, actively working (OR :8.63), unplanned pregnancy (OR: 3.21), having a first child compared to having two children (OR: 11.20), having low birth weight infant (OR: 8.33) and unmet social support (OR: 1.02) were risk factors for PPD (p<0.05).

**Conclusion:** Considering the results of this study, increasing family income, social and spousal support, prevention of unplanned pregnancies using effective family planning methods and improving the life prosperity of the women are essential to the decrease of PPD prevalence.

**Keywords:** Postpartum, Depression, Social support, Spousal support

## 1. INTRODUCTION

Prevalence of psychiatric disorders increases during pregnancy (10%) and postpartum (13%) periods [1]. Postpartum mood disorders are maternity blues, non-psychotic postpartum depression (PPD) and postpartum psychosis (PPP). Maternity blues is the most common one in postpartum period (26-84%) [2, 3]. Generally, spontaneous regression occurs not requiring treatment [4]. Maternity blues increases PPD by 20% and may be a precursor for PPD [3]. PPP is a psychotic attack that occurs within the first 2 weeks postpartum with rapid clinical onset. Its prevalence is 1 to 2 attacks per 1000 births [5]. Previous bipolar disorder is an important risk factor for PPP [6].

Postpartum depression is a non-psychotic depressive episode that starts in the postpartum period [7, 8] and is most commonly seen in the postpartum 4th-6th week but the risk continues up to one year [9]. Its prevalence in the world is reported as 1.9% – 82.2% [10]. In Turkey, PPD prevalence varies between 5.0%-61.8% [11]. Standardized interview forms (International Classification of Disease-10, The Diagnostic and Statistical Manual of Mental Disorders-V based) for diagnosis [12, 13] and various tools such as Edinburgh Postpartum Depression Scale (EPDS) are used for screening [14]. PPD is a multifactorial complex process in which biological, obstetric, pediatric, psychosocial and cultural factors

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are involved. Postpartum psychiatric morbidity is important for being one of the most frequent complications of labor and the third leading cause of disease among perinatal disorders. PPD is also important since it is one of the leading causes of maternal deaths by suicide and has negative impact on marriage and childbirth. The aim of the study is to determine the prevalence of PPD among the mothers of 0-6 month old infants and evaluate the social, economical, obstetrical and infant-related risk factors particularly the effects of social and spousal support on PPD prevalence.

## 2. MATERIALS and METHODS

In this institutional based cross-sectional study 3547 mothers with 0-6 months old infants registered to three family health centers (FHCs) in a district of Istanbul were included. Sample size was calculated as 386 when PPD prevalence (for postpartum 6 months) was accepted as 35%, error margin 5%, design effect 1.2, confidence interval 95% using OpenEpi program stratified sampling was used according to socioeconomic level. Three FHCs were selected proportionally from low, medium and high socioeconomic level subdistricts in the study district. Postpartum 6 months period mothers registered in the FHCs were included in the study. The inclusion criteria were: having 0-6 months old infant, understanding and speaking Turkish and acceptance of participating in the study. A total of 303 women who gave informed consent priorly, completed the survey and post-hoc power was calculated as 96 % at 0.05  $\alpha$ -error and 0.20 effect size.

### Measures

#### *Postpartum Depression*

The Turkish version of the Edinburgh Postpartum Depression Scale (EPDS) was used to assess depression symptoms [14]. It is a 10-item scale with 4 options for questioning the mood in the last week. Each item scored on a 4-point scale (0 to 3) and the total score was calculated. EPDS cut-off score is considered as either 12 or 13. Sensitivity of EPDS in the antenatal and postnatal period is 84% and specificity is 88%. [14]. In this study, the cut-off point was accepted as 13 as it is generally accepted as 13 in Turkish literature [16,17] and for defining case level depressive symptoms [18].

#### *Social Support*

Postpartum Support Questionnaire (PSQ) was used [19]. Thirty four Likert-type items associated with financial support, emotional support, information support. Scoring between 0 and 7 for 'importance of need' and 'received support' respectively. The highest score is 238. The Turkish version of the PSQ was validated [20]. In this study, the difference between the total score of 'the importance of the need' and the total score of 'received support' was defined as 'unmet social support'.

#### *Spousal Support*

Spousal support was evaluated by 'The Scale of Perceived Spousal Support among Women in Early Postpartum Period' [21] composed of 16 items with 5-point Likert-type scoring. Positive questions are 1,2,3,4,5,6,7,11,13,16th questions and

negative questions are 8,9,10,12,14,15th questions. Highest score is 80 and the lowest score is 16.

Ethics committee approval and institution permission were received (Marmara University Faculty of Medicine Clinical Research Ethics Committee, 03.11.2017, protocol code: 09.2017.635). Data collection was carried out by face-to-face method getting written informed consent.

### Statistical Analysis

Pearson's Chi-squared test, Fisher's exact test, Mann-Whitney U test, Student's t-test and Binary Logistic Regression Analysis were used for statistics. Also Cronbach's Alpha Reliability test was used for EPDS, PSQ (importance of need), PSQ (received support) and 'Perceived Spousal Support among Women in Early Postpartum Period' scale. P values less than 0.05 were considered statistically significant.

## 3. RESULTS

### *Sociodemographic Characteristics*

The sociodemographic characteristics of the study group as well as a comparison of sociodemographic characteristics and PPD are presented in Table I. Higher educational level and higher income level were protective factors significantly associated with PPD. Also comparison of some health characteristics of mothers and PPD were summarized in Table II.

### *Reproductive Health and Infant Characteristics*

Forty-six percent of participants had their first child. First gestational median age was 27 (23-30) years. One out of every three mothers had pregnancy loss during reproductive life. Last pregnancy was unplanned for 20.5% of the mothers. Seven participants had multiple pregnancies. Twenty-four percent of participants had health problems during their last pregnancy. Cesarean delivery history was present in 70%. 31.4% had used contraceptive methods. Number of female and male infants was similar. Low birth weight (LBW) infant percent was 6.6%. Breastfeeding percent was 93.7% and 68.6% of the participants were feeding their infant by exclusive breastfeeding. Low first gestational age, unplanned last pregnancy, smoking during pregnancy, having health problems and stressful events during the last pregnancy increased the PPD and were found as risk factors in this study. Use of in vitro fertilization in the last pregnancy, weight gain, use of contraceptive method, birth place, delivery method, use of forceps / vacuum and pregnancy type did not affect PPD significantly ( $p > 0.05$ ) (Table III).

Postpartum depression frequency was significantly higher in mothers who had LBW infants compared to those who did not ( $p = 0.03$ ) (Table III). Infant age, gender, prematurity, need for intensive care at birth, presence of congenital disease, feeding with only breastfeeding did not affect PPD significantly ( $p > 0.05$ ).

**Table I.** Comparison of sociodemographic characteristics and PPD

		PPD ( cut off 13)						p value <sup>a</sup>
		No		Yes		Total		
		n	%	n	%	n	%	
Education level	College and above	134	93.7	9	6.3	143	100	<b>0.04</b>
	High school and below	139	86.9	21	13.1	160	100	
Occupation	Housewife	139	88.5	18	11.5	157	100	0.53 <sup>b</sup>
	Health workers	21	95.5	1	4.5	22	100	
	Others	113	91.1	11	8.9	124	100	
Actively working status	No	255	91.1	25	8.9	280	100	0.06 <sup>b</sup>
	Yes	18	78.3	5	21.7	23	100	
Actively working status of spouse	No	9	100.0	0	0.0	9	100	0.60
	Yes	264	89.8	30	10.2	294	100	
Private health insurance	No	208	88.5	27	11.5	235	100	0.085
	Yes	65	95.6	3	4.4	68	100	
		Median	25-75Percentile	Median	25-75. Percentile			
Age		31	28-35	31	27-35			0.45 <sup>c</sup>
Income per capita (TL)		1000	625-1667	666	417-1250			<b>0.007<sup>c</sup></b>

<sup>a</sup> Pearson's Chi-squared test, <sup>b</sup> Fisher's exact test, <sup>c</sup> Mann-Whitney U test

**Table II.** Comparison of participants' general health features and PPD

		PPD ( cut off 13)						p value <sup>a</sup>
		No		Yes		Total		
		n	%	n	%	n	%	
Chronic disease	Yes	46	85.2	8	14.8	54	100	0.18
	No	227	91.2	22	8.8	249	100	
Smoking	Yes	37	82.2	8	17.8	45	100	0.10 <sup>b</sup>
	No	236	91.5	22	8.5	258	100	
Alcohol use	Yes	11	100.0	0	0.0	11	100	0.61 <sup>b</sup>
	No	262	89.7	30	10.3	292	100	
Physical activity	Inactive	255	90.7	26	9.3	281	100	0.25 <sup>b</sup>
	Active	18	81.8	4	18.2	22	100	
Body mass index <sup>c</sup>	underweight-normal	122	90.4	13	9.6	135	100	0.89
	Overweight-obese	151	89.9	17	10.1	168	100	

<sup>a</sup> Pearson's Chi-squared test, <sup>b</sup> Fisher's exact test, <sup>c</sup> Personal declaration

**Table III.** Comparison of reproductive health and infant characteristics and PPD

		PPD ( cut off 13)						p value <sup>a</sup>
		No		Yes		Total		
		n	%	n	%	n	%	
Planned pregnancy	Yes	223	92.5	18	7.5	241	100	<b>0.005</b>
	No	50	80.6	12	19.4	62	100	
Wanted pregnancy	Yes	252	91.6	23	8.4	275	100	<b>0.012<sup>b</sup></b>
	No	21	75.0	7	25.0	28	100	
Health problem during pregnancy	Yes	62	83.8	12	16.2	74	100	<b>0.036</b>
	No	211	92.1	18	7.9	229	100	
Smoking during pregnancy	Yes	21	75.0	7	25.0	28	100	<b>0.012<sup>b</sup></b>
	No	252	91.6	23	8.4	275	100	
Stressfull event during pregnancy	Yes	37	77.1	11	22.9	48	100	<b>0.003<sup>b</sup></b>
	No	236	92.5	19	7.5	255	100	
Low birth weight infant	Yes	15	75.0	5	25.0	20	100	<b>0,036<sup>b</sup></b>
	No	258	91.2	25	8.8	283	100	
		Median	25.-75. Percentile	Median	25.-75. Percentile			
First gestation age		27	23-30	25	21-27			<b>0.023<sup>c</sup></b>

<sup>a</sup> Pearson's Chi-squared test. <sup>b</sup>Fisher's exact test. <sup>c</sup> Mann-Whitney U test

**Table IV.** Comparison of PSQ and spousal support scores and PPD

	PPD ( cut off 13)						p value <sup>a</sup>
	No		Yes		Total		
	Median	25.-75. Percentile	Median	25.-75. Percentile	Median	25.-75. Percentile	
PSQ 'importance of need'	169	137-201	167	154-197	169	138-201	0.770
PSQ 'unmet social support'	15	0-37	45	25-102	17	0-39	<b>0.001&gt;</b>
Spousal support	70	61-77	60	49-66	70	60-77	<b>0.001&gt;</b>
	Mean	sd	Mean	sd	Mean	sd	
PSQ 'recieved support'	146	49	106	46	141.74	49.74	<b>0.001&gt;<sup>b</sup></b>

sd: standard deviation,PSQ: postpartum support questionairw. <sup>a</sup>Mann-Whitney U test, <sup>b</sup>Student's t-test

**Psychosociocultural Characteristics**

All three scales administered to mothers had high internal consistency. Cronbach's Alpha Coefficients were 0.83; 0.96; 0.96; 0.91 for EPDS, PSQ (importance of need), PSQ (received support) and 'Perceived Spousal Support among Women in Early Postpartum Period' scale respectively. PPD prevalence was 9.9% with cut off score 13 and 14.9% with cut off score 12. Six participants (2%) answered the question 'suicide intention in the last 7 days' as 'sometimes'. Low 'received social support' and spousal support scores but high 'unmet social support' was found to significantly increase PPD frequency (Table IV).

Postpartum depression frequency was higher in mothers who had previous psychiatric disorders and lost relatives in

the last 6 months. Family history of psychiatric disorder and previous PPD did not significantly affect PPD (Table V). First marriage age was found to be lower in mothers with PPD and there was no significant difference in terms of marriage number, intermarriage, marriage style and marriage year. Good communication also was found to be protective for PPD (Table VI).

As a result of multivariate analysis, increase in income per capita was found to reduce the risk of PPD significantly (OR: 0.99). Working actively (OR:8.63) , having the first child (compared to having 2 children) (OR:11.20), unplanned pregnancy (OR:3.21), having LBW infant (OR:8.33), high'unmet social support' score (OR:1.02) increased PPD significantly (Table VII).

**Table V.** Comparison of participants' psychological characteristics with PPD

		PPD ( cut off 13)						p value <sup>a</sup>
		No		Yes		Total		
		n	%	n	%	n	%	
Previous psychiatric disorder	Yes	30	78.9	8	21.1	38	100	<b>0.036<sup>b</sup></b>
	No	243	91.7	22	8.3	265	100	
Family history with psychiatric disorders	Yes	43	84.3	8	15.7	51	100	0.13
	No	230	91.3	22	8.7	252	100	
Relative loss in the previous last 6 months	Yes	17	73.9	6	26.1	23	100	<b>0.017<sup>b</sup></b>
	No	256	91.4	24	8.6	280	100	
Previous PPD (n=159) <sup>c</sup>	Yes	35	83.3	7	16.7	42	100	0.07 <sup>b</sup>
	No	109	93.2	8	6.8	117	100	

<sup>a</sup>Pearson's Chi-squared test, <sup>b</sup>Fisher's exact test, <sup>c</sup>Women having more than one child

**Table VI.** Comparison of participants' sociocultural characteristics and PPD

		PPD ( cut off 13)						p value <sup>a</sup>
		No		Yes		Total		
		n	%	n	%	n	%	
Number of marriages	One	259	90.6	27	9.4	286	100	0.23
	Two	14	82.4	3	17.6	17	100	
Marriage style	Modern	229	90.5	24	9.5	253	100	0.60 <sup>b</sup>
	Traditional	44	88.0	6	12.0	50	100	
Intermarriage	Yes	45	93.8	3	6.3	48	100	0.44 <sup>b</sup>
	No	228	89.4	27	10.6	255	100	
Communication with spouse	Good	262	92.3	22	7.7	284	100	<b>0.001&gt;</b>
	Bad	11	57.9	8	42.1	19	100	
Communication with spouse family	Good	251	93.7	17	6.3	268	100	<b>0.001&gt;</b>
	Bad	22	62.9	13	37.1	35	100	
Communication with own family	Good	265	91.1	26	8.9	291	100	<b>0.006</b>
	Bad	8	66.7	4	33.3	12	100	
Marital satisfaction	Good	263	91.3	25	8.7	288	100	<b>0.002</b>
	Bad	10	66.7	5	33.3	15	100	
		Median	25.-75. percentile	Median	25.-75.percentile			
First marriage age		24	21-27	22	19-25			<b>0.03<sup>c</sup></b>
Marriage years		5	2-9	5	3-11			0.81 <sup>c</sup>

<sup>a</sup>Pearson's Chi-squared test, <sup>b</sup>Fisher's exact test, <sup>c</sup>Mann-Whitney U test

**Table VII.** Comparison of risk factors and PPD

	OR (%95 CI)	p value <sup>a</sup>
Age	0.98 (0.89-1.07)	0.715
Lower educational level (High school and below)	0.52 (0.16-1.63)	0.264
Income per capita <sup>b</sup>	0.99 (0.98-1.00)	<b>0.005</b>
Actively working <sup>c</sup>	8.63 (1.71-43.44)	<b>0.009</b>
Child number		<b>0.006</b>
1	11.2 (2.51-49.87)	<b>0.002</b>
2	1	
3 ≤	2.29 (0.51-10.18)	0.273
Unplanned pregnancy	3.21 (1.08-9.47)	<b>0.035</b>
Stressful event during pregnancy	2.74 (0.91-8.22)	0.072
Low birth weight infant	8.33 (1.98-35.11)	<b>0.004</b>
PSQ 'unmet social support'	1.02 (1.01-1.03)	<b>0.000</b>
Spousal support score	0.95 (0.91-0.99)	<b>0.019</b>

PSQ: Postpartum Support Questionnaire, <sup>a</sup> Binary logistic regression test, <sup>b</sup> Personal declaration, <sup>c</sup> Not actively working (never worked, paid/unpaid leave)

#### 4. DISCUSSION

In the present study, PPD prevalence was 9.9% while cut off score was 13 and 14.9% while cut off score was 12. Increase in income per capita reduced the risk of PPD significantly (OR: 0.99). Actively working (OR:8.63), having a first child (compared to having 2 children) (OR:11.20), unplanned pregnancy (OR:3.21), having LBW infant (OR:8.33), high 'unmet social support' score (OR:1.02) increased PPD significantly.

In a comprehensive meta-analysis ( $n = 12810$ ) of Hara et al., the mean prevalence of PPD was 13% [1]. Studies in Turkey reported 5% – 61.8% value for PPD prevalence. In a meta-analysis composing different regions an average prevalence of 23.8% for PPD [11] was reported. In the present study, PPD prevalence was 9.9%. It may be lower due to the fact that our study was performed in the FHCs not in hospitals. The data collection period was May-July when depression may be seen less, health care behavior in the presence of depression might be decreased. The postpartum period was accepted as 6 months, it was not restricted to the earlier period. All these reasons might have resulted in lower PPD prevalence.

In some of the studies, maternal age, marital status, educational status and number of children did not significantly affect PPD prevalence [1]. On the other hand, in the review of Norhayati et al., low socioeconomic level, low educational level and low-income were associated with PPD [10]. In the meta-analysis of Özcan et al., income level and spouse working status were prominent among the factors associated with PPD [11]. In the study of Özmen et al., the PPD risk was 1.38 times higher in the first child [22]. In this study, PPD prevalence was higher in the lower education group (13.1%) than in the higher education group (6.3%). PPD risk was 5.9 times higher in the actively working group compared to the non-working mothers (never worked, paid or unpaid leave). Although, not working is considered as a risk factor for PPD generally, it is important to point out that working causes serious stress and tiredness for mothers and may induce PPD. As in many studies, income per capita showed a significant negative relationship with PPD in our study.

The study of Palumbo et al., found no association between number of parity and PPD [23]. But it was reported that having many children in countries with economic difficulties such as Nepal increased PPD and in countries such as the United Arab Emirates where many children are considered advantageous for women, the results were reversed [24]. In our study, having the first child increased PPD 10 times compared to having the second. Lack of experience and higher anxiety levels when having a first child was probably responsible for this predisposition to PPD.

Previously, abortion has been shown to increase the risk of PPD [24]. In the review of Özcan et al., history of abortion and stillbirth were positively associated with PPD in 6 of 15 studies [11]. In our study, PPD frequency was higher in women who had at least one pregnancy loss (curettage, miscarriage, stillbirth) compared to those who did not, but this result was not statistically significant. Therefore, we did not include pregnancy

loss. Unwanted or unplanned pregnancy is a risk factor for PPD [23, 25]. In the study of Arslantaş et al., unwanted pregnancy significantly decreased PPD [26]. In our study, PPD was positive for 7.5% for planned and 19.4% for unplanned pregnancies. In a study performed in Canada, having health problems during pregnancy was a factor increasing PPD risk by 1.45 times [27]. In our study, the frequency of PPD was higher (16.2%) for those who had any health problems during the last pregnancy compared to women who did not (7.9%). In addition, experiencing a stressful event in pregnancy increased PPD by 3.65 times. It is known that LBW infant or neonatal complications of the infant also triggers PPD [28]. In our study, having LBW infant increased PPD risk 6.75 fold.

While infant gender was not associated with PPD in the study of Sylven et al. [29], it was shown that having a female infant was a risk factor for PPD in the study of Deng et al. from China [30]. In our study, no relationship was found between the infant gender and PPD. The fact that Istanbul is a cosmopolitan province may have caused not finding any significant relationship between PPD and infant gender.

Previous psychiatric disorder is a risk factor for PPD in many countries [10]. In the review of Özcan et al., previous psychiatric disorder was positively associated with PPD in 24 of 33 studies. Family history of psychiatric disorder was associated with PPD in 7 of 15 studies [11]. In this study, PPD was more frequent in the participants having previous psychiatric disorder (21.1%) compared to those who did not (8.3%), but no significant relationship was found between family history of psychiatric disorder and PPD.

Inandı et al., showed that PPD increased by 1.34 if the first marriage age was '18 and below' [31]. In our study, first marital age was lower in PPD positive mothers compared to PPD negative ones. First marriage age in Turkey is associated with many basic characteristics such as education level, working status for women.

In the study of Deng et al., a bad relationship with mother-in-law and sister-in-law was found to increase PPD risk by 2.34 times [30]. The study of Arslantaş et al., showed that relation with spouse, bad relations with own family and poor relationship with friends were found to be positively associated with PPD [26]. In our study, participants having good communication with spouse, spouse family and own family were found as less depressive compared to those having bad communication. Also, having a good marital relationship was protective against PPD.

In the study performed in Canada, the lack of social support during postpartum period increases the PPD risk by 5.10 times [27]. In a study in Qatar, the lack of family support increases the risk of PPD by 1.6 times [32]. In our study, 'unmet social support' scores were positively correlated with PPD. The absence of sources of social support or poor relations with the social environment is expected to increase the risk of PPD. However, this relation should be interpreted cautiously as women with depression may undervalue social support.

In a prospective study carried out in Korea, 37 mothers in postpartum 1st week were evaluated and their spouses were

provided to support their mother and baby from the 1st to the 6th postpartum week. The spouses' support lowered mothers' postpartum depression (24.3% and 0% respectively for postpartum 1st and 6th week) and increased self-efficacy [33]. Gross et al., carried out a study evaluating the 150 first-time mothers and fathers from the prenatal period to the 4th postpartum month in the United States. Parenting efficacy experiences were found to be negatively associated with PPD for both mothers and fathers especially in the first postpartum month.[34]. In our study it was found that the mothers who did not experience PPD had higher spousal support scores. Especially in traditional societies, male partners' perceiving parenting or spousal support as sharing responsibilities and not simply as help will contribute to improving parenting both in mothers and fathers.

There are few studies examining the relation between PPD and social and spousal support in Turkey. Including the FHCs from different socioeconomical regions; effects of factors such as income, educational status, working status were observed more clearly. Response rate (95%) and the rate of reaching the target number of sample size (79%) were high.

As the data were collected in the summer months, less health service use for depressive women and the fact that data were collected during visits to FHCs, may be the causes of lower prevalence of PPD.

### Conclusion

In our study, one out of every ten mothers in the postpartum 0-6 month period had PPD. PPD risk was less in cases with high income; higher in those working actively, having a first child, an unplanned pregnancy, an LBW infant and unmet social support. Evaluation of the psychiatric condition and risk factors of mothers should be done during the visits to gynecology and FHCs providing guidance. Responsibilities such as child-care, housework imposed on the female by the community should be shared by spouses and supported by the social environment, especially for women working in the postpartum period. Unplanned pregnancies should be minimized by effective family planning especially for women having three or more children.

### Compliance with the Ethical Standards

**Ethical Approval:** The study was approved by the Ethics Committee of Marmara University, School of Medicine (03.11.2017, protocol code: 09.2017.635). Women were provided with participant information sheets, had the study explained to them by a researcher and had the opportunity to ask questions prior to providing informed consent. Written informed consent was obtained from all participants.

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**Authors' contributions:** N.Y. and D.S. Conceived the study. N.Y. Collected the data. N.Y. and D.S. Performed analyses.

N.Y. Initially drafted the manuscript, and D.S. critically revised it. N.Y. and D.S. Approved the submitted article.

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