

RESEARCH ARTICLE

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Received: 06.08.2020
Acceptance: 09.05.2021
DOI: 10.18521/ktd.777632

Konuralp Medical Journal
e-ISSN1309-3878
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The Assessment of the Orthorexia Nervosa Tendencies among Postpartum Women

ABSTRACT

Objective: Orthorexia Nervosa is a new eating disorder and is known as an excessive control of quality of the eaten foods. During postpartum period, related to the physiological and medical changes, it was stated that most of the women have concerns about their body image and therefore they have tendency to change their lifestyle, and it can lead mothers to Orthorexia Nervosa. The aim of this study was to assess the Orthorexia Nervosa tendencies of postpartum women and investigate the related factors.

Methods: This descriptive study was carried out among postpartum women between 1st December 2018-1st February 2019. We contacted with the women via e-mails through a social media group special for postpartum women which had 10.350 members at the time of study. The minimum sample size for universe was estimated as 370 women, assuming 95% confidence interval and 5% sampling error. The questionnaire consists of two parts: the general features of participants and the ORTO-11 questionnaire.

Results: The mean ORTO-11 scale score of all participants (N=511) was 22.68±4.09 (min=12; max=35) and had statistically significant relationship with age, working status, vocation, family style, the understanding of being healthy, physical activity, diet status and the order of nutrition status. According to cut-off point, 87.7 % (n=426) of the participants were found to be at risk of developing Orthorexia Nervosa.

Conclusions: The tendency toward Orthorexia Nervosa was greater among mothers in postpartum period. Also the mothers who change their eating habits and change the physical activity status after delivery had higher ON tendency than others. So the postpartum period is very important to follow up the mothers about ON and such eating disorders because of the changing lifestyle habits. Family physicians have a critical role in this regard with their preventive medicine qualifications.

Keywords: Eating Disorders, Orthorexia Nervosa, Postpartum Period.

Doğum Sonrası Kadınlarda Ortoreksiya Nervosa Eğilimlerinin Değerlendirilmesi

ÖZET

Amaç: Ortoreksiya Nervosa yeni bir yeme bozukluğudur ve yenen yiyeceklerin kalitesinin aşırı kontrolü olarak bilinir. Doğum sonrası dönemde fizyolojik ve tıbbi değişikliklere bağlı olarak kadınların çoğunun beden imajıyla ilgili endişeleri olduğu ve bu nedenle yaşam tarzlarını değiştirme eğiliminde oldukları ve anneleri Ortoreksiya Nervozaya yönlendirebileceği belirtildi. Bu çalışmanın amacı, postpartum kadınların Ortoreksiya Nervosa eğilimlerini değerlendirmek ve ilgili faktörleri araştırmaktır.

Gereç ve Yöntem: Bu tanımlayıcı araştırma, 1 Aralık 2018-1 Şubat 2019 tarihleri arasında postpartum kadınlarda gerçekleştirildi. Çalışma zamanında 10.350 üyesi olan doğum sonrası kadınlara özel bir sosyal medya grubu aracılığıyla kadınlarla e-posta yoluyla iletişime geçtik. Evren için minimum örneklem büyüklüğü, %95 güven aralığı ve % 5 örnekleme hatası varsayılarak 370 kadın olarak tahmin edilmiştir. Anket iki bölümden oluşmaktadır: katılımcıların genel özellikleri ve ORTO-11 anketi.

Bulgular: Tüm katılımcıların (N=511) ortalama ORTO-11 ölçek puanı 22.68 ± 4.09 (min=12; maks= 35) olup; yaş, çalışma durumu, meslek, aile tipi, sağlıklı olma anlayışı, fiziksel aktivite, diyet durumu ve beslenme sıklığı ile istatistiksel olarak anlamlı ilişki bulundu. Kesim noktasına göre, katılımcıların % 87.7'sinin (n = 426) Orthorexia Nervosa gelişme riski taşıdığı görüldü.

Sonuç: Doğum sonrası dönemde annelerde ON eğilimi yüksek olarak bulundu. Ayrıca doğumdan sonra beslenme alışkanlıklarını ve fiziksel aktivite durumunu değiştiren annelerin ON eğiliminin diğerlerine göre daha yüksek olduğu görüldü. Bu nedenle doğum sonrası dönem, değişen yaşam tarzı alışkanlıkları nedeniyle annelerin ON ve benzeri yeme bozukluklarının yakın takibi açısından çok önemlidir. Aile hekimleri koruyucu hekimlik vasfı ile bu konuda çok kritik bir role sahiptirler.

Anahtar Kelimeler: Yeme Bozuklukları, Ortoreksiya Nervosa, Postpartum Dönem.

INTRODUCTION

In recent years there has been a growing concern in the world about Orthorexia Nervosa (ON). A lot of clinicians have started to interest with ON as a research subject all over the world. ON is a possible new eating disorder and is known as an excessive control of quality of the eaten foods (1) or pathological obsession with eating healthy (2). Several scales/measures for the assessment of Orthorexia Nervosa have been developed and the most widely used questionnaire to detect Orthorexia Nervosa tendency is the ORTO-15, developed by Donini et al. (3). In Turkish version, ORTO-15 scale was adapted to ORTO-11 (4). The prevalence rates of ON are reported from 6% to nearly 90% according to a measurement to identify orthorexia with ORTO-15 or ORTO-11 (3-9).

Pregnancy is a very complex period for women and during this special period and postpartum period there is an increased risk of the onset or worsening of psychiatric disorders, including postpartum depression and anxiety, obsessive-compulsive disorder, post-traumatic stress disorder and eating disorders (10). During postpartum period, related to the physiological and medical changes, it was stated that most of the women have concerns about their body image and therefore they have tendency to change their lifestyle, especially about nutrition and therefore, and it can lead mothers to Orthorexia Nervosa (11). In this period when baby nutrition is also very important, women have concerns about breastfeeding and nutrition of baby and again they may make various changes in their lifestyle (12). This might bring mothers to a pathological point about the consumption of healthy food and lead to healthy diet obsession (ON).

Although there are studies related to eating disorders of women in this special period, there are very few studies on ON tendency of postpartum mothers in literature (12). The aim of this study was to assess the Orthorexia Nervosa tendencies of postpartum women and investigate the related factors.

MATERIAL AND METHODS

This study had a descriptive design. The local ethics committee at XXX University approved the study (number: GO 18/1126-14); informed consent was obtained from all the participants. The study was conducted in two months starting at 1st December, 2018. The universe of the study was composed of mothers who have a child under the age of two in 2018 at the time of study who were members of an online social group called "2017-2018 mothers". We contacted with the women via e-mails through a social media group special for postpartum women which had 10.350 members at the time of study. The minimum sample size for universe was estimated as 370 women, assuming 95% confidence interval and 5% sampling error.

All mothers could not be recommended by their group team to join this study, only we could reach the ones who saw the questionnaire during the sharing. A total of 511 participants responded and were included in the study. The mothers who had twins (or more multiple births) were excluded. Mothers who had more than one child were instructed to answer the questions based on their experiences with the youngest child.

Our survey consists of two parts: The questionnaire and the ORTO-11 questionnaire. The questionnaire assessed sociodemographic and anthropometric characteristics (educational status, working status, vocation, family style, weight, height), health status (diagnosed disease, the idea of being healthy, tobacco use, alcohol use, physical activity, diet, vitamin supplementation), delivery and baby feeding features of mothers (type of delivery, desired baby condition, breastfeeding status, difficulty in breastfeeding, concern about the amount of milk, change in nutrition during breastfeeding) and information about their lifestyle changes.

ORTO-11 Questionnaire: Two instruments have been developed to assess ON. The Bratman test is based mostly on clinical experience, and its validity has not been investigated by the author himself or by others (18). In 2005, Donini and colleagues developed the ORTO-15 based on Bratman's test (3). The translation into Turkish was made by Arusoğlu in 2006 and adapted to Turkish as ORTO-11 (4). In the evaluation of the scale, the increase in score shows that the risk of orthorexia nervosa is reduced. The cut-off point used for the evaluation of the ORTO-11 scale in our study was determined by using the cut-off point in Arusoğlu's Turkish adaptation study (4). Individuals who participated in the study were divided into quarterly according to ORTO-11 scores. The cut-off point of the study was determined as 27 points in 25%, and under this value was evaluated as orthorexic tendencies. Cronbach's Alpha of the scale was informed as 0.62.

The data obtained from the study were evaluated with SPSS (Statistical Package for Social Sciences) 23.0 1 package programme. Qualitative variables are given as number (S) and percentage (%). Continuous variables obtained by measurement (quantitative variables); arithmetic mean, standard deviation, minimum, maximum values are given. Descriptive statistics were calculated to determine the status of ON among mothers. Each of the scores obtained from the ORTO-11 scale was compared according to sociodemographic and anthropometric characteristics, delivery and breastfeeding features of mothers and physical activity, nutrition and diet status of mothers after delivery by using t test, Mann Whitney U test and ANOVA (F-test). Chi-square and Fisher's exact tests were used to assess

qualitative data. Pearson test was used for the normal distribution and the correlation coefficients and statistical significance were calculated by using the Spearman test. $P < 0.05$ was considered to be significant in all statistical analyzes.

RESULTS

The study population consisted of 511 mothers who volunteered to participate in the study. The mean age of the participants was 31.92 ± 4.44 (min=20; max=46). Mean BMI of the participants was 24.86 ± 11.00 kg/m² (min=10.52; max=43.43) and according to the WHO classification of nutritional status, 276 (64.3%) of them had normal weight. The mean number of children of mothers was 1.45 ± 0.62 (min=1; max=5). The mean age of children was 15.99 ± 9.03 months (min=1; max=24).

The mean ORTO-11 scale score of all participants was 22.68 ± 4.09 (min=12; max=35) points. The distribution of ORTO-11 scores based on characteristics of the participants can be seen in Table I. ORTO-11 scores of mothers had statistically significant relationship with age, working status, vocation, and family style. The ORTO-11 scores were higher in mothers older than 40 years, working mothers, health worker mothers, mothers who live at core family and they show less propensity to ON than others. However, teachers and officers had high ortorectic tendency than other mothers. ORTO-11 scores had statistically significant relationship with the idea of being healthy, physical activity status and diet status after delivery. According to the idea of being healthy status; the mothers who think they were healthy had lower ORTO-11 scores and also had ortorectic tendencies. The mothers who doing regular physical activity and those who had regular diet had lower ORTO-11 scores and had high ortorectic tendencies than others.

35.2% (n=180) of the mothers noted that they change all eating habits as regularly (both order and frequency of nutrition) after birth. Those mothers' ORTO 11 score mean was 22.15 ± 3.645 (min=12; max=30) and 91.3% of these mothers had high ortorectic tendencies. 66.7% of them said they had no diet before birth and 88% of them noted that they change their eating habits because of breastfeeding. The distribution of ORTO-11 scores based on birth, breastfeeding status and associated nutritional status of the participants can be seen in Table II. Higher rates of orthorexia tendencies were observed in mothers who changed their eating patterns as regularly after birth.

According to cut-off point, 87.7% (n=426) of the participants were found to be at the risk of developing ON. The comparison of ON tendency

status according to ORTO-11 cut-off points and characteristics, health status and breastfeeding status of participants can be seen in Table III. Among the mothers, there is a significant statistical difference between the ON tendencies of mothers as to BMI, diet status, changing in order and frequency of nutrition's. Overweights, the participants who do occasionally diet, who fed more regular and more often after delivery had higher ON tendency.

DISCUSSION

This study was conducted to examine the maternal nutrition changes after delivery and ON tendencies of those mothers and to investigate the relationship between them. The results were discussed as the following:

The limited literature regarding ON is dominated by studies reporting point prevalence using the ORTO-15/11 or one of their adaptations (3-9). Generally, the biggest part of the studies were performed on the medical faculty students, doctors, dietitians, performance artists, who were defined as risk groups for orthorexia nervosa, and the common feature of these groups is that they are aware of the importance of healthy nutrition and body image (3-9). We planned our study as a hypothesis that mothers after delivery may be in the risk group due to the same features (aware of the importance of healthy nutrition and body image). There is no study on ON tendency of postpartum mothers in literature. This is the first study on this subject.

The mothers' pathological attitudes towards eating, body shape and weight, could have a direct effect on the child and in the way she feeds him/her, hereby the eating disorders such as ON is very important to detect. Mothers can also take care of better quality nutrition to increase the quality and quantity of breast milk during the breastfeeding period and that condition may increase the possibility of ON tendency of mothers. In our study, according to cut-off point of ORTO-11 scale, 87.7% of the participants were found to be at the risk of developing ON and the mean ORTO-11 scale (22.68 ± 4.09) also supports that result. In literature, the prevalence of ON varies widely from 6% in an Italian sample to 88.7% in a sample comprised entirely of female nutritionists. Bosi et al. have reported that the prevalence rate of 318 resident physicians was 45.5% (7). Fidan et al. determined 43.6% of 878 Turkish medical students have tendency to ON (19). Orthorexia prevalence was identified as 6.9% in the research done by Donini et al (3). Ramacciotti et al. were aimed to determine ON in the "general population" and they found the prevalence rate as 57.6% (5).

Table 1. Distribution of ORTO-11 scores according to some features of participants (N:511)

	Number (n)	Percentage (%)	ORTO-11 score <i>M±SD</i>	p
Age**				
30>	143	29.5	22.07±3.96	0.004
30-34	218	45	22.77±4.21	
35-39	99	20.5	22.65±4.80	
40≤	24	5.0	25.33±3.70	
Child number*				
1	311	61.6	22.58±4.258	0.514
2≤	194	38.4	22.84±3.814	
Child age**				
6 months≥	66	14.2	22.83±3.913	0.288
7-12 months	67	14.4	23.29±4.057	
13-18 months	187	40.2	22.20±4.154	
19 months≤	145	31.2	22.84±4.351	
Educational Status**				
Primary Education	18	3.6	22.88±3.35	0.140
High School	57	11.6	31.44±4.15	
University	432	84.8	22.83±4.10	
Working status*				
Working	175	34.5	22.33±1.15	0.001
Not working	332	65.5	21.66±4.04	
Vocation**				
Physician	268	52.9	23.70±3.85	0.001
Nurse	10	2	21.10±4.01	
Dietician	1	0.2	23.72±4.03	
Other Health workers	9	1.8	23.63±4.40	
Teacher	64	12.6	20.59±3.62	
Engineer / Architect	8	1.6	21.43±3.95	
Officer	13	2.6	20.67±3.02	
Worker	3	0.6	22.67±6.35	
Private sector	31	6.1	21.66±4.25	
Other	87	17.2	21.86±4.24	
Family style*				
Core family	453	89.3	22.81±4.06	0.021
Large family	54	10.7	21.56±3.96	
BMI**				
Underweight	18	4.2	23.56±4.79	0.677
Normal	276	64.3	22.90±4.22	
Overweight	104	24.2	22.45±3.65	
Obese	32	7.4	22.52±3.97	
Diagnosed Disease *				
Yes	362	71.4	22.79±4.15	0.621
No	145	28.6	22.39±3.93	
The idea of being healthy*				
Yes	427	84.2	21.68±3.79	0.020
No	80	15.8	22.87±4.12	
Tobacco use**				
Current smoker	63	12.4	22.01±4.53	0.108
Non smoker	73.2	73.2	22.91±4.01	
Left	12.4	14.0	22.03±4.04	
Alcohol use**				
Yes	52	10.3	23.22±3.69	0.390
No	364	71.8	22.73±4.19	
Left	89	17.6	22.18±3.86	
Physical activity *				
Yes	64	87.2	21.15±4.56	0.002
No	442	12.6	22.91±3.97	
Diet**				
Regularly	17	64.7	19.56±3.84	0.0001
Occasionally	161	31.8	21.90±4.13	
Never	328	3.4	23.22±3.96	
Vitamin supplementation**				
Yes	59	11.6	23.22±3.69	0.846
Sometimes	165	32.5	22.84±3.97	
No	281	55.4	21.49±4.31	

Mean = M, SD= Standard deviation, BMI: Body mass index

* Independent Sample T test was used for statistical analysis

** One-way ANOVA was used for statistical analysis

P<0.05 was accepted as statistically significant

Table 2. Distribution of ORTO-11 scores according to factors related to participants' babies (N:511)

	Number (n)	Percentage (%)	ORTO-11 score <i>M±SD</i>	p
Type of delivery*				
Vaginal	131	25.8	22.54±4.11	0.466
Cesarean	376	75.2	22.72±4.08	
Desired baby condition*				
Yes	467	92.1	22.75±4.07	0.242
No	40	7.9	21.92±4.22	
Breastfeeding status**				
Yes	403	79.5	22.68±3.92	0.866
No	3	0.6	21.50±2.12	
Left	101	19.9	22.73±4.79	
Difficulty in breastfeeding*				
Yes	195	38.5	22.32±3.97	0.118
No	312	61.5	22.91±4.14	
Concerned about the amount of milk *				
Yes	312	61.7	22.76±4.11	0.666
No	194	38.3	22.58±4.03	
Change in nutrition during breastfeeding*				
Yes	333	65.7	22.69±4.02	0.763
No	174	34.3	22.66±4.22	
Change in eating patterns (order of nutrition)**				
No change	176	34.7	23.69±4.55	0.001
It was irregular	78	15.4	22.00±3.43	
It was regularly	249	49.1	22.18±3.79	
Change in frequency of nutrition**				
No change	165	32.5	23.36±4.47	0.104
Yes,more often	51	10.1	22.56±4.82	
Yes,less than older	286	56.4	22.36±3.68	

Mean = M, SD= Standard deviation

* Independent Sample T test was used for statistical analysis

** One-way ANOVA was used for statistical analysis

P<0.05 was accepted as statistically significant

Missbatch et al. administered the translated instrument to 1029 people recruited through social media and found almost 70% of their sample showed "orthorectic" tendencies (20). In this study, the prevalence of orthorexia was also high (87.7%). The fact that the study population is composed of women suggests that the prevalence may be high. And also this special period (breastfeeding, postpartum stress, pregnancy related body shape changes) may affect the results. This condition made us to think about the postpartum anxiety of mothers about weight, body shape and feeding their baby may affect the nutrition status and may cause the ON tendency of them. When we evaluated the orthorectic tendencies of the mothers who change all eating habits as regularly (both order and frequency of nutrition) after birth; their tendency to ON was also higher than other mothers. These result supports our idea. However, it is recommended that this finding to be strengthened by an analytical study with a control group.

Although Arusoğlu and his colleagues indicated that age is not effective on orthorectic tendency (4); it is reported that increasing age can be effective on increasing the orthorectic tendency in the other studies (3,7,19). But in our study we found that lower ages had high orthorectic tendency. The stress of being a mother at a young age may be

the reason why our study group came out in this way.

The relationship between the orthorectic tendency and the educational status of individuals was contradictory, and Donini et al. indicated that the orthorectic tendency is high in those with low levels of education (3) and generally, doctors, dietitians defined as in the risk groups for orthorexia nervosa because of their job. Unlike that results we found high ON tendency in officers and teachers and low ON tendency in health workers. We believe that this result may have been affected by some factors (breastfeeding break times, etc) and there will be a need for more extensive research and analysis.

Studies in the literature found a significant relationship between the risk of eating disorder and trying to lose weight, exercise for weight loss, prolonged fasting and vomiting (19,21). Like these studies we found lower scores and also higher ON tendency on the mothers who did regularly physical exercise and diet.

In our study we found that the participants who think they are healthy had higher orthorectic tendencies. When we look to meaning of ON; excessive control of quality of the eaten foods is emphasized. Also the control of quality of the eaten foods is a healthy behavior; however if it is

Table 3. Comparison of ORTO-11 cut-off points according to some features of participants (N:511)

	ON tendency (+)		ON tendency (-)		p
	n	%	n	%	
Age					
30>	122	90.4	13	9.6	0.576
30-34	180	85.7	30	14.3	
35-39	86	89.6	10	10.4	
40≤	21	87.5	3	12.5	
Educational Status					
Primary Education	16	94.1	1	5.9	0.690
High School	47	90.4	5	9.6	
University	361	87	54	13	
Working status					
Working	152	92.7	12	7.3	0.085
Not working	270	84.9	48	15.1	
Family style					
Core family	379	87.3	55	12.7	0.527
Large family	47	90.4	5	9.6	
BMI					
Underweight	13	72.2	5	27.8	0.033
Normal	225	85.6	38	14.4	
Overweight	95	94.1	6	5.9	
Obese	26	89.7	3	10.3	
Diagnosed Disease					
Yes	126	86.2	12	13.8	0.121
No	299	91.3	48	8.7	
The idea of being healthy					
Yes	352	93.7	55	6.3	0.076
No	74	86.5	5	13.5	
Tobacco use					
Smoker	54	86.6	6	13.4	0.494
Non smoker	309	91	48	9	
Left	61	90	6	10	
Alcohol use					
Yes	41	87	9	13	0.130
No	301	93.2	45	6.8	
Left	82	82	6	18	
Physical activity					
Yes	56	87.2	6	12.8	0.490
No	369	90.3	54	0.7	
Diet					
Regularly	16	100	0	0	0.022
Occasionally	142	92.2	12	7.8	
Never	267	84.8	48	15.2	
Vitamin supplementation					
Yes	52	87.7	5	12.3	0.597
Sometimes	136	86.1	22	13.9	
No	236	91.2	33	8.8	
Type of delivery					
Vaginal	106	86.2	17	13.8	0.565
Cesarean	320	88.2	43	11.8	
Desired baby condition					
Yes	381	89.2	33	10.8	0.761
No	56	80.5	4	19.5	
Breastfeeding status					
Yes	344	82.3	43	17.7	0.185
No	2	100	0	0	
Left	79	88.9	17	11.1	
Difficulty in breastfeeding					
Yes	166	89.7	19	10.3	0.270
No	259	86.3	41	13.7	
Concerned about the amount of milk					
Yes	261	87.7	37	12.3	0.970
No	161	87.6	23	12.4	
Change in nutrition during breastfeeding					
Yes	282	87.1	142	12.9	0.817
No	142	87.9	21	12.1	
Change in order of nutrition					
No change	132	78.1	37	21.9	<0.001
It was irregular	70	94.6	4	5.4	
It was regularly	222	92.1	19	7.9	
Change in frequency of nutrition					
No change	125	80.1	31	19.9	0.001
Yes,more offen	256	85.4	22	14.6	
Yes,less than older	41	92.1	7	17.9	

Ki square test was used for statistical analysis
P<0.05 was accepted as statistacally significant

excessive; then it can become a disease state (ON). Studies also emphasized that ON is a disease caused by the excess of the idea of being healthy (19,21,23).

Another important result of our study was that mothers who fed more regular and more often compared with before pregnancy, their ON tendency rates were high. This result confirms our hypothesis again. In postpartum period, for various reasons that mothers can change their diet and this change may take an obsessive dimension and as a result ON may occur. The topic of healthy nutrition has been currently and extensively covered in the Turkish media for the past 10–15 years, also there is a lot of social media and television messages especially about mother-infant nutrition. It is thought that the frequent messages have had a cautionary effect.

In our study the ON tendency was found to be higher in mothers who started physical activity after birth. Also the physical activity is an indicative of a healthy living trend. According to the results of a study, it was observed that people who are in the group of sport exhibited more impaired eating attitudes and showed higher orthorectic tendency than those who did not (24).

In some studies, it was stated that body mass index may be an indicator for predicting orthorexic behaviors (19,21,22). Particularly high BMI values are reported to be associated with low ORTO-15 scores (19,21,23). In our study we did not find a relationship between BMI and ORTO scores, but when we used cut off point to describe the ON tendency; we found a relationship between ON tendency and BMI, and it was observed that the overweights had a greater predisposition toward ON. Social interactions and with the media

promoting a thin body, and therefore concerns about body weight and body image are increasing. Eating disorders are the group of diseases in which the effort on the body is the one which is observed most clearly.

The study has some strengths and limitations. A vast amount of data was collected from a specific group of people who were postpartum women from different cities, which strengthens the results. However, this is a cross-sectional study, the results cannot be generalized. In addition, as the surveys were sent over the Internet, participant characteristics may not be representative of the whole postpartum women.

CONCLUSION

As a summary, in our study, the tendency toward ON was high among mothers in postpartum period. Also the mothers who change their eating habits and change the physical activity status after delivery had higher ON tendency than others. So the postpartum period is very important to detect the mothers about ON and such eating disorders because of the changing lifestyle habits. Because of the biggest part of our sample breastfeed their baby, the effect of breastfeeding on ON cannot be assessed. The obsession of healthy eating can adversely affect body perception in the course of the process and may pave the way for health problems such as the desire to improve external image, energy and nutrient deficiencies and malnutrition. After delivery the nutrition of baby is important and also regular and healthy nutrition of mother is very important. Because of the frequent visits of primary care due to baby, mothers might want to help from primary care professionals about true and regular nutrition in this period.

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