ZKTB

ORIGINAL RESEARCH

Assesment of Female Sexual Function of Pregnant Women: Relation with Serum Androgens and Fetal Gender

Gebelerde Cinsel Fonksiyon Değerlendirmesi: Serum Androjen ve Fetal Cinsiyet İlişkisi

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ABSTRACT

Aim: *As a result of physical and hormonal changes during pregnancy sexual health of women affected significantly.*

Material and Methods: *To evaluate sexual changes related to androgenic hormones and fetal gender in pregnant Turkish women.*

Main Outcome Measures: *This cross-sectional study included 194 healthy pregnant women evaluated at Obstetrics and Gynecology Clinics. Pregnant women completed a self-administered questionnaire including the Female Sexual Function Index (FSFI) and questions related to socio-demographic characteristics. Serum androgens were run simultaneously.*

Results: *There was a rate of 68% sexual dysfunction among Turkish pregnant women. The sexual dysfunction rate comprises the total and domain scores of FSFI throughout the pregnancy. Although the total and domain scores of FSFI did not differ between trimesters, orgasm domain scores were found to be decreasing with increasing gestational age. Along with an increase in total testosterone, the DHEAS level decreases with increasing gestational age. When the women with female fetus were evaluated for FSFI scores and androgen levels between trimesters, the mean level of total testosterone in third trimester was higher than the levels of first and second trimesters besides the mean level of DHEAS in the first trimester was higher than the levels of second and third trimesters. There was not any significant difference according to the androgen levels, FSFI total and domain scores between trimesters of the women with male fetus.*

Conclusion: *We found a high sexual dysfunction rate (68%) among pregnant Turkish women. The level of total testosterone, DHEAS and FSFI orgasm domain were found to be different between trimesters. Healthcare providers should provide more time for counseling about sexuality and encourage pregnant women to talk about sexual health and problems during antenatal visits.*

Keywords: *sexual function, pregnancy, androgens, fetal gender*

ÖZET

Giriş: *Hamilelik sırasında fiziksel ve hormonal değişiklikler sonucunda kadınların cinsel sağlığı önemli derecede etkilenmektedir.*

Amaç: *Hamile Türk kadınlarda cinsel değişiklikler ile androjenik hormonlar ve fetal cinsiyet ilişkisini değerlendirmek.*

Gereç ve Yöntemler: *Bu kesitsel çalışma Kadın Hastalıkları ve Doğum Kliniği'nde değerlendirilen 194 sağlıklı gebeyi içermektedir. Gebe kadınlar, Kadın cinsel işlev ölçeği(KCİÖ) ve sosyodemografik özelliklerle ilgili sorular içeren ,kendi kendine uygulanan bir anket doldurdu. Serum androjenleri aynı zamanda çalışıldı. FSFI toplam ve altgrup puanları, maternal serum total testosteron , dehidroepiandrosteron sülfat(DHEAS) ve 1-4 delta androstenedion düzeyleri ölçüldü.*

Bulgular: *Türk gebe kadınlarda %68 oranında cinsel işlev bozukluğu bulundu. Cinsel işlev bozukluğu oranı, gebelik boyunca KCİÖ'nin toplam ve altgrup puanlarını içerir. KCİÖ'nin toplam ve altgrup puanları trimesterlar arasında farklılık göstermese de , gebelik haftası ilerledikçe orgazm altgrup puanının azaldığı bulundu. Bunun yanında gebelik haftası ilerledikçe toplam testosteron artışıyla beraber DHEAS düzeyinin azaldığı görüldü. Kız fetüslü kadınlarda KCİÖ puanları ve trimesterlar arasında androjen düzeyleri değerlendirildiğinde, üçüncü trimesterdaki total testosteron düzeyi ,birinci ve ikinci trimester düzeylerinden daha yüksek bulundu. Ayrıca ilk trimesterdaki DHEAS düzeyleri ikinci ve üçüncü trimester seviyelerinden yüksek bulundu. Erkek fetüsü olan kadınlarda trimesterlar arasında androjen düzeyleri, KCİÖ toplam ve altgrup puanları açısından anlamlı bir fark yoktu.*

Sonuç: *Türk gebe kadınlarda yüksek bir cinsel işlev bozukluğu oranı (%68) bulundu. Toplam testosteron, DHEAS ve KCİÖ orgazm altgrup skorunun trimesterlar arasında farklılık gösterdiği bulundu. Sağlık hizmeti sunanlar antenatal muayenelerde cinsel sağlık konusunda danışmanlık için daha çok zaman ayırmalı ve cinsel sağlık ve sorunlar hakkında konuşmak için gebeleri teşvik etmelidirler.*

Anahtar Kelimeler: *cinsel sağlık, androjen, fetüs*

INTRODUCTION

Pregnancy is an important period in a woman's life that can have challenging effects on her physical, psychological, and hormonal functions in relation to her social, cultural, and religious attitudes, thus affecting the sexual function of a couple.

The symptoms related to female sexual dysfunction occur frequently during pregnancy, affecting 63%[1] to 93%[2] of all pregnant women. Seven et al. evaluated 286 pregnant women, and they reported a 77.6% sexual dysfunction rate at the clinical level [3]. Additionally, Leite et al. reported sexual dysfunction rates among pregnant adults of 46.6% in the first trimester, 34.2% in the second trimester, and 73.3% in the third trimester[4]. Most of the research up until now has found that sexual activity decreases throughout pregnancy, particularly during the third trimester[5, 6, 7, 8, 9]. During the first trimester, nausea, vomiting, gastric distress, fatigue, and anxiety or fear about miscarriage lead to a decreased libido[6,9]. During the second trimester, women claim to feel better, and the pregnancy complaints decrease, physical discomfort subsides, vaginal lubrication increases, and libido increases [6, 9]. By the third trimester, sexual activity decreases due to physical and psychological factors. The physical factors include fetal head engagement, urinary incontinence, a partner's weight on the uterus during sexual intercourse, subluxation of the pubic symphysis and sacroiliac joints, and vaginal changes[7]. A couple's fears of inducing preterm labor or harming the fetus during sexual intercourse are psychological factors that contribute to a dec-

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line in sexual activity during pregnancy, especially during the third trimester[10]. Besides due to the increase in hormones during pregnancy, the vaginal connective tissue decreases, while the muscle fibers of the vaginal wall increase in size in preparation for delivery[8,11]. Moreover, pelvic vasocongestion and vaginal congestion with reduced lubrication can cause vaginal discomfort and dyspareunia[7].

Dehydroepiandrosterone (DHEA) is an androgenic hormone and it is one of the significant precursor of steroid hormone biosynthesis[12]. DHEA exerts its clinical effects via conversion to androgen and/or estrogen[12]. First, DHEA is converted to androstenedione, which is converted to testosterone. Via the enzyme aromatase, androstenedione can be converted to estrone, testosterone can be converted to estradiol[13], and 16-OH-testosterone can be converted to estriol in the placental unit[14]. It is reported that the level of maternal testosterone increases [14] while the level of DHEAS decreases approximately two times during the course of pregnancy [15]. As a result hormonal differences regarding to fetal gender, its relation to sexual habits of pregnant women needs to be issued more. The aim of this study was to evaluate sexual changes of pregnant Turkish women during the three trimester and its relation to androgenic hormones and fetal gender..

MATERIAL AND METHOD

This study was conducted with 194 healthy pregnant women evaluated Obstetrics and Gynecology Clinics between February 2016 and November 2017. The research was carried out with healthy pregnant women aged 17-38 years. Pregnant women attending to Obstetrics and Gynecology Outpatient Clinics were evaluated and informed about the study. Illiterate women and women not having enough education to understand questions related to sexuality were not invited to study. Women having any problems related to the pregnancy such as risk of miscarriage, preterm labor, placenta previa, and women having chronic systemic/endocrine disorders such as diabetes mellitus, hyperthyroidism, hypothyroidism and psychiatric problems were not enrolled into the study. Women who were married and having sexual intercourse in the previous four weeks included to the study. Study protocol was explained to all eligible volunteers and patients who wanted to participate to the study were given patient information sheet and self-reporting questionnaire. Ten women who accepted to participate did not fill the questionnaire completely and they were not included to the study. The first 13 weeks were accepted as first trimester (T1), the second trimester (T2) as 14-27 weeks and the third trimester (T3) as 28-41 weeks.

In our hospital all of the pregnant women get trainings about pregnancy, pregnancy related health conditions, labour, newborne care, sexual health during pregnancy at the pregnant training outpatient clinic. Trainings were given by an experienced midwife and pregnants' questions were answered instantly at their antenatal visits. They were informed that sexual intercourse is safe during all trimesters. Exceptional conditions for sexual intercourse such as pain, cramping, unexplained vaginal bleeding, premature dilatation of cervix, premature rupture of membranes were explained to all women. All of the women included to the study had their trainings about sexuality during pregnancy at the pregnant training outpatient clinic before participating to the study.

The study was a cross-sectional observational research. The data was gathered over a 18 month period. All of the participants gave blood samples between the hours 10 am and 3 pm for avoiding the diurnal variations in hormone levels. All patients filled self-report questionnaire including Female Sexual Function Index (FSFI) and questions related to sociodemographic data in a separate room sufficient privacy. Questions related to sociodemographical data includes educational and occupational status, income, medical history, obstetric history including gravity, parity and the number of vaginal birth and cesarean section. Educational status was grouped as less than 8 years (elementary and secondary school) and more (high school and university).

FSFI was used for assessing the female sexual function. FSFI is a validated, self-administered,19-item questionnaire assessing sexual function of women during the previous four weeks. FSFI includes six domains; desire, arousal, lubrication, orgasm, satisfaction and pain. Turkish validation of FSFI was performed by Oksuz and Malhan[16]. The score ranges from 0 to 5 for each question except for the questions 1,2,15,16 in which score ranges from 1 to 5 [17]. The sum score of each domain was obtained from related questions multiplying by its factor. The total score was obtained by summing the scores of each domain. The minimum of the sum score of all domains is 2 and the maximum is 36. Sexual dysfunction was defined as having a total score below 25 [18].

All of the participants gave blood samples for the evaluation of androgens; total testosterone, dehydroepiandrosterone sulfate (DHEAS), 1-4 delta androstenedione. All samples were run within 2 hours at the Biochemistry Laboratory of the same hospital.

The total testosterone (TT) and DHEAS were measured with Advia Centaur kits (Advia Centaur and Advia Centaur XP Systems, Siemens, USA), which are competitive immunoassays utilizing direct chemiluminescent technology. The test sensitivity and assay range for total testosterone was 10–1,500 ng/dL (0.35–52.1 nmol/L) and it was 3–1,500 µg/dL (0.08–40.75 µmol/L) for DHEAS. The 1-4 delta androstenedione was measured with Agilent Technologies 6460 Triple Quad using LC-MS/MS method. The test sensitivity was 0.009 ng/mL and the reporTable range was 0.03-500 ng/mL.

Ethical approval was obtained from Kocaeli University Ethical Committee and verbal informed consents were obtained from all participants for the use of their data in the current study.

Statistical Analysis

Sample size calculation was done with power analyses. With the significance level of α:0.05 and the statistical power of 0.95, total sample size required for comparison of continous variables between trimesters were 45.

Statistical analyses were performed using the SPSS 21.0 (Statistical Package for Social Sciences, Chicago, IL, USA) software. Continous variables were expressed as mean±standart deviation, median (minimum-maximum) and categorical variables were expressed as number and percentage. The Kruskal-Wallis test and One-Way Anova test were used to compare more than two continuous variables. Adjusted p was calculated with Bonferroni correction.

RESULTS

During the study 204 women accepted to participate and 194 women completed FSFI questionnarie.Of these 194 women, 62 was in first trimester, 69 was in second trimester, 63 was in third trimester. 71.2 % of women had low income (under 570 U.S dollars) and 26.8 % had middle income (over 570 U.S dollars) (Table 1). We couldn't learn six patients' gender of infant because these women discontinued the follow-up. Using the FSFI cut-off score of 25 for sexual dysfunction, 68% of pregnant women had sexual dysfunction during pregnancy and 32 % didn't have sexual dysfunction (Table 1).

When the androgen levels, FSFI total and domain scores were examined according to the trimesters, the level of total testosterone, Dehiydroepiandrosteronsulphate and FSFI orgasm domain scores were different (p: 0.007, p: 0.015, p: 0.007) (Table 2). The FSFI total scores were not significantly different between first trimester (T1), second trimester (T2) and third trimester T3 (p: 0.111).

When total testosterone levels were examined between each trimester, a significant difference was found between second and third trimester and also a significant difference was found between first and third trimester. The mean level of total testosterone in T1 was 0.67±0.32, it was 0.71±0.47 in T2 and it was 0.99±0.83 in T3. The level of total testosterone in T3 was significantly higher than the levels in T2 and in T1 (p:0.014, p:0.024 respectively). When the levels of DHEAS were examined between each trimesters, a significant difference was found between third and first trimester. The mean level of DHEAS in T3 was 122.01±48.2 and it was 161.33±77.1 in T1. The level of DHEAS was significantly higher in T1 (p: 0.011). There was not any differences between trimesters according to the FSFI domain scores except orgasm domain.

Table 1: Characteristics of patients.

Age (years)	Mean±Sd	27.09±5.37
	N (number)	194
BMI	Mean±Sd	26.28±4.69
	N (number)	194
Gestational week n (%)	1.trimester	62 (32)
	2.trimester	69 (35.6)
	3.trimester	63 (32.5)
Number of vaginal birth n (%)	0	125 (64.4)
	1	32 (16.5)
	≥2	37 (19.1)
Number of caesarean section n (%)	No	143 (73.7)
	≥1	51 (26.3)
Educational attainment n (%)	≤ 8 years	110 (56.7)
	> 8 years	84 (43.3)
Working condition n (%)	Not working	171 (88.1)
	Working	23 (11.9)
Income n (%)	Low	138 (71.2)
	Mıddle	52 (26.8)
Infant gender n (%)	Male	88 (46.8)
	Female	100 (53.2)
Sexual dysfunction n (%)	Present	132 (68)
	Absent	62 (32)

Table 2: Androgen levels, FSFI total score and FSFI domain scores for patients in the first, second and third trimesters.

	1. trimester (a)		2.trimester (b)		3.trimester (c)		p	Comparisons between trimesters	Adjusted p [a]
	N	**Mean ±SD**	**N**	**Mean ±SD**	**N**	**Mean ±SD**			
Total testosteron (ng/dL)	62	0.67±0.32	69	0.71±0.47	63	0.99±0.83	0.007	b-a	1.000
								b-c	0.014 *
								a-c	0.024 *
Androsteredione 1-4delta (ng/mL)	61	2.41±1.51	68	2.53±2.01	63	3.29±3.14	0.439		
Dehydroepiandrosteronesulfat (µg/dL)	62	161.33±77.1	68	150.76±83.83	63	122.01±48.2	0.015	c-b	0.283
								c-a	0.011 *
								b-a	0.598
Desire domain	62	3.08±0.98	69	3.22±0.88	63	3.25±1.01	0.687		
Arousal domain	62	3.56±1.15	69	3.56±1.04	63	3.34±1.09	0.381		
Lubrication domain	62	4.45±0.83	69	4.29±0.83	63	4.2±0.91	0.391		
Orgasm domain	62	4.43±0.91	69	4.10±1.07	63	3.83±1.16	0.007	c-b	0.593
								c-a	0.006 *
								b-a	0.173
Satisfaction domain	62	4.62±1.25	69	4.42±1.23	63	4.22±1.39	0.251		
Pain domain	62	4.01±1.36	69	3.74±1.15	63	3.56±1.39	0.351		
FSFI total score	62	24.17±4.34	69	23.33±4.49	63	22.42±5.13	0.111		

** Trimesters were shown as a, b, c. Kruskall-Wallis and One-Way Anova tests were done. a: Adjusted p was calculated with Bonferroni correction *p<0.05.*

Table 3: Comparison of androgen levels, FSFI total and domain scores between trimesters for women with female fetus.

	Female fetus 1.trimester		Female fetus 2.trimester		Female fetus 3.trimester		
	N	**Mean ±SD**	**N**	**Mean ±SD**	**N**	**Mean ±SD**	**p**
Total testosteron (ng/dL)	27	0.65±0.36	36	0.58±0.30	37	1.17±0.99	0.000[a]
Androsteredione 1-4delta (ng/mL)	26	2.28±1.61	35	2.13±1.64	37	3.43±3.62	0.303[a]
Dehydroepiandrosteronesulfat (µg/dL)	27	179.54±80.56	35	139.16±90.49	37	121.08±51.39	0.004[a]
Desire domain	27	3.33±0.95	36	3.13±0.8	37	5.40±3.42	0.334[a]
Arousal domain	27	3.59±1.11	36	3.49±1.02	37	3.52±1.15	0.885[a]
Lubrication domain	27	4.37±0.78	36	4.15±0.91	37	4.30±0.81	0.883[a]
Orgasm domain	27	4.5±0.80	36	3.97±1.12	37	3.98±0.92	0.052[a]
Satisfaction domain	27	4.96±1.09	36	4.28±1.2	37	4.42±1.22	0.049[a]
Pain domain	27	4.32±1.35	36	3.6±1.26	37	3.63±1.44	0.067[a]
FSFI total score	27	25.08±4.11	36	22.63±4.52	37	23.28±4.44	0.087[b]

[a] *Kruskal-Wallis test was used,* [b] *One Way Anova test was used.*

Table 4: Comparison of androgen levels, FSFI total and domain scores between trimesters for women with male fetus.

	Male fetus 1.trimester		Male fetus 2.trimester		Male fetus 3.trimester		
	N	**Mean ±SD**	**N**	**Mean ±SD**	**N**	**Mean ±SD**	**p**
Total testosteron (ng/dL)	30	0.65±0.26	32	0.86±0.58	26	0.75±0.43	0.57[a]
Androsteredione 1-4delta (ng/mL)	30	2.41±1.24	32	2.87±2.28	26	3.10±2.36	0.792[a]
Dehydroepiandrosteronesulfat (µg/dL)	30	144.15±72.80	32	163.57±76.70	26	123.34±44.24	0.202[a]
Desire domain	30	2.90±1.00	32	3.28±0.96	26	3.02±1.16	0.281[a]
Arousal domain	30	3.48±1.23	32	3.64±1.08	26	3.08±0.98	0.131[a]
Lubrication domain	30	4.52±0.93	32	4.44±0.72	26	4.06±1.04	0.257[a]
Orgasm domain	30	4.28±1.02	32	4.25±1.01	26	3.61±1.42	0.104[a]
Satisfaction domain	30	4.25±1.39	32	4.56±1.28	26	3.94±1.57	0.344[a]
Pain domain	30	3.76±1.31	32	3.92±1.01	26	3.46±1.35	0.378[a]
FSFI total score	30	23.19±4.61	32	24.11±4.46	26	21.18±5.84	0.083[b]

[a] *Kruskal-Wallis test was used,* [b] *One Way Anova test was used.*

When the FSFI orgasm domain scores were examined between each trimester, a significant difference was found between third and first trimester (p: 0.006). The mean FSFI orgasm domain score was 4.43±0.91 in T1, and it was 3.83±1.16 in T3. The FSFI orgasm domain scores decreased with increasing gestational age (Table 2).

When we examine women with female fetus according to the androgen levels, FSFI total and domain scores between trimesters, a significant difference was found for the level of total testosterone, DHEAS and FSFI satisfaction domain scores (p: 0.000, p:0.004, p:0.049 respectively), (Table 3). When the level of total testosterone was examined between each trimester, a significant difference was found between second and third trimesters and between first and third trimesters (p: 0.000, p: 0.07). The mean level of total testosterone was 0.65±0.36 in T1, 0.58±0.3 in T2 and 1.17±0.99 in T3 (Table 3). The mean level of total testosterone in third trimester was higher than the levels of first and second trimesters of women with female fetus. When the level of DHEAS was examined between each trimesters, a significant difference was found between third and first trimesters and between second and first trimesters (p:0.005, p:0.018). The mean level of DHEAS was 179.54±80.56 in T1, 139.16±90.49 in T2 and 121.08±51.39 in T3 (Table 3).

The mean level of DHEAS in first trimester was higher than the levels of second and third trimesters of women with female fetus. Although there was significant difference for the FSFI satisfaction domain scores between trimesters for the women with female fetus (p:0.049), when the comparisons were done between each trimester, we could not find statistical significance (p>0.05).

When we examine women with male fetus according to the androgen levels, FSFI total and domain scores between trimesters, there was not any significant difference (p>0.05) (Table 4).

DISCUSSION

In this cross-sectional study, we aimed to evaluate hormonal and sexual changes during pregnancy. We identified a sexual dysfunction rate of 68% in the population of healthy, pregnant Turkish women. The total testosterone levels increased and DHEAS levels decreased with increasing gestational age. In addition, FSFI orgasm domain scores decreased with increasing gestational age.

The high sexual dysfunction rate of 68% is consistent with previous studies. Seven et al.[19]who also studied pregnant Turkish women with FSFI questionnaire, reports a sexual dysfunction rate of 77.6%.

Another study of pregnant Turkish women found that 63.4% of women had sexual dysfunction [20]. High sexual dysfunction rates during pregnancy can be attributed to a lack of adequate counseling about sexuality during antenatal visits and to embarrassment about discussing sexuality during pregnancy. It was reported in the literature [2122] that pregnant women, especially in the third trimester, experience sexual dysfunction due to fear of harming the fetus and/or inducing premature delivery. In the studies of Çorbacıoğlu et al., performed with 348 Turkish pregnant women, 38.7% of women and 36.2% of men worried that sexual intercourse may harm the fetus [23].

In the studies of Ninivago et. al., Çorbacıoğlu et. al., and Aslan et. al [24, 23, 25], they reported decreasing FSFI total scores with increasing gestational age. In the present study, total FSFI scores and FSFI domain scores, except orgasm domain scores, did not differ between trimesters. This can be attributed to high sexual dysfunction rates and low total and domain FSFI scores of women. Although low FSFI total and domain scores were seen throughout pregnancy, orgasm domain scores decreased significantly as gestational weeks increased. Low orgasm scores mean that vaginal contractions are weaker or absent, or that tonic muscle spasm may be present. Due to the influence of pregnancy hormones, the connective tissue of the vagina decreases and muscle fibers of the vaginal wall increase in size to prepare for vaginal birth [26]. Meanwhile, a generalized strong vasocongestion can be observed during third trimester, and cramps may accompany orgasmic contractions [27]. It is not clear to what extent changes in physiological reactions, or an active repression of orgasm, may protect the baby from harmful effects (if any) of sexual intercourse [28, 29, 30, 31].

Orgasmic problems may also be related to fear of harming the baby and inducing premature delivery. In the study by Gökyıldız et. al, they reported decreasing sexual satisfaction frequencies with increasing gestation. In the first trimester 56% of pregnant women, in the second trimester 42.7% of pregnant women and in the third trimester 20% of pregnant women were satisfied with their sexual lives[32]. In the present study, although there was not significant difference in the FSFI satisfaction domain scores between trimesters among the whole study group, women with female fetuses had different satisfaction rates during gestation. In our opinion, there could be psychological reasons for this differences among pregnant women with female fetuses and this should be investigated more.

In evaluating the androgenic hormonal changes during pregnancy, we found that total maternal testosterone levels increase, while DHEAS levels decrease with advancing gestational age. The serum level of sex-hormone binding globulin and plasma protein that binds sex steroids increases during pregnancy. Despite the fact that testosterone is a key substrate for estrogen formation by the placenta [15] total maternal testosterone level was found to be rising with increasing gestational age in our study. This can be explained with the effect of increasing levels of sex-hormone binding globulin and plasma protein. The decrease in the level of DHEAS during pregnancy can be associated with the conversion of DHEAS to E1 and E2 by placental enzymes [33]. When women were evaluated for androgen levels and FSFI total and domain scores between trimesters, we found that the total testosterone levels of women with a female fetus in T3 was higher than the other trimesters.

Although it is known that androgens produced by fetal gonads that cross the placenta do not alter the maternal androgen pool significantly and the level of maternal serum testosterone does not change due to gender of the offspring [34, 35] the results of this study show that women with a female fetus had increasing total testosterone levels in third trimester. In the recent studies, the levels of maternal serum testosterone were not different according to male and female fetuses [36 37 38 39 40] while black mothers' maternal serum testosterone levels were higher than white mothers' levels [40]. Besides the high levels of maternal testosterone found in the same gestational weeks in the study of Gol et al. could not be explained [37 41]. In our opinion the high maternal serum testosterone levels of Turkish women with female fetus could be attributed to genetic and racial difference.

Study Limitations:

The limitations of this study can be reported as the use of a cross-sectional design instead of a prospective one and the comparisons related to trimesters were done among different women, not with the same women throughout. It could be explained as there were few pregnant women accepting to answer the questionnaire more than one time throughout the gestation. Besides women having sexual intercourse in the previous four weeks were included the study, we didn't have information about any history related to sexual habits before pregnancy. In addition, we did not measure the level of free testosterone because of limited assays.

CONCLUSION

Within the small group of pregnant Turkish women observed in this study, there was a high sexual dysfunction rate of 68%. Although all of the participants were from a large city in Turkey, these results cannot be attributed to the entire population. Fear of harming the fetus or inducing premature delivery may be reasons for sexual dysfunction during pregnancy. Healthcare providers should provide more time and better conditions for counseling about sexuality and should encourage pregnant women to talk about sexual health and problems during antenatal visits. Studies that evaluate the reasons for, and results of, sexual problems during pregnancy with larger population groups in different countries with a prospective design are needed.

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