

## ORIGINAL RESEARCH ARTICLE

# Sexual Dysfunction in Postpartum Turkish Women: It's Relationship with Depression and Some Risk Factors

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## Abstract

This study aimed to determine the prevalence of sexual dysfunction in postpartum Turkish women, and the relation between sexual dysfunction and depression, and some risk factors. This study was conducted with 530 postpartum women who had given birth during the previous 2-12 months. Data were collected with the Personal Information Form, Index of Female Sexual Function, and Edinburg Postnatal Depression Scale. For the data analysis, descriptive statistics, the Chi-square test, and Pearson correlation analysis were conducted using SPSS version 16. In the study, 74.3% of the postpartum women experienced sexual dysfunction. Sexual dysfunction was more prevalent in women who were high school graduates, whose reported economic status was middle class, who had a history of high-risk pregnancy, and whose menstruations did not recommence. It was also prevalent in women who experienced dyspareunia, who did not use a family planning method, who used withdrawal family planning method, and who experienced postnatal depression. A medium correlation was determined between the sexual dysfunction and postnatal depression. Assessment of the sexual dysfunction prevalence and risk factors of postpartum women enables healthcare professionals to use necessary intervention strategies. (*Afr J Reprod Health* 2018; 22[4]: 54-63).

**Keywords:** Depression, Postpartum period, Sexual dysfunction, Turkish women

## Résumé

Cette étude visait à déterminer la prévalence de la dysfonction sexuelle chez les femmes turques après l'accouchement et la relation entre la dysfonction sexuelle et la dépression et certains facteurs de risque. Cette étude a été menée auprès de 530 femmes postnatales ayant accouché au cours des 2-12 mois précédents. Les données ont été recueillies à l'aide du formulaire d'informations personnelles, de l'index de la fonction sexuelle chez la femme et de l'échelle de dépression postnatale d'Édimbourg. Pour l'analyse des données, des statistiques descriptives, le test du chi carré et l'analyse de corrélation de Pearson ont été réalisés à l'aide de la version 16 de SPSS. Dans l'étude, 74,3% des femmes en post-partum présentaient un dysfonctionnement sexuel. Le dysfonctionnement sexuel était plus fréquent chez les femmes qui étaient à l'école secondaire. Les diplômés, dont le statut économique déclaré était celui de la classe moyenne, qui avaient des antécédents de grossesse à haut risque et dont les règles ne recommençaient pas. Il était également prévalent chez les femmes atteintes de dyspareunie, n'ayant pas utilisé de méthode de planification familiale, ayant utilisé la méthode de planification familiale de retrait et souffrant de dépression postnatale. Une corrélation moyenne a été déterminée entre le dysfonctionnement sexuel et la dépression postnatale. L'évaluation de la prévalence de la dysfonction sexuelle et des facteurs de risque des femmes en post-partum permet aux professionnels de la santé d'utiliser les stratégies d'intervention nécessaires. (*Afr J Reprod Health* 2018; 22[4]: 54-63).

**Mots-clés:** Dépression, période post-partum, dysfonctionnement sexuel, femmes turques

## Introduction

Pregnancy and delivery are one of the most significant periods of a women's life<sup>1, 2</sup>. Postpartum period is the time when spouses adapt

to their parenting roles, resume their sexual activities, but have problems specific to this period. The physiological, psychological, socio-cultural changes that occur during this period affect women's sexual health and behaviors<sup>1, 3-5</sup>.

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Reports show that during the postpartum period, women experience problems such as less frequent sexual intercourse, decreased sexual desire, difficulty having orgasm, vaginal dryness, perineal pain, dyspareunia, decreased sexual satisfaction and sexual dysfunction<sup>2,6-8</sup>.

Sexual dysfunction is characterized by disturbance in sexual desire and in the psychophysiological changes that characterize the sexual response cycle and cause marked distress and interpersonal difficulty<sup>9</sup>. Female sexual dysfunction is a multidimensional disorder with a prominent impact on overall general well-being<sup>10,11</sup>. In several studies, it has been indicated that the prevalence of sexual dysfunction in the postpartum period varies between 20% and 76%<sup>8,12-15</sup>. Postpartum sexual function is affected by changes in anatomy, hormonal milieu, family structure, and husband relationships that accompany childbirth<sup>4,6,14</sup>. Breastfeeding, vaginal bleeding, caesarean section, perineal trauma and episiotomy can cause sexual dysfunction in women<sup>1-3,5,7</sup>. In addition, prenatal sexual problems, adaptation to the new role, marital conflicts, sleep disorders, and fatigue negatively affect the sexual life of women and thus lay the groundwork for sexual dysfunction<sup>2,12,16</sup>.

One of the variables affecting sexual life in the postnatal period is postnatal depression<sup>14,17,18</sup>. Symptoms of postnatal depression are the most common health issues that require rapid and careful attention during the first year after childbirth. A range of 6-33% of women is reported to experience symptoms of depression during the postnatal period. Several demographic and obstetric factors (maternal age, twin birth, type of delivery, breastfeeding, unintended pregnancy, perinatal complications, etc.) associated with depression in the postpartum period have been identified<sup>17-19</sup>. In addition, it has been reported that there is a strong mutual relationship between depression and sexual dysfunction, and that sexual dysfunction is more frequent in women with postnatal depression<sup>8,20</sup>.

Postpartum sexual dysfunction is the serious morbidity and may lead to a variety of physical, mental, social adverse effects on the woman.

However, this problem has received little consideration from both healthcare providers and researchers<sup>2,4</sup>. There is a gap in the literature related to studies investigating sexual dysfunction and depression among postpartum women<sup>14,18</sup>, and there is no study on this issue in Turkey. However, the World Health Organization<sup>11</sup> highlights that sexual health is an important aspect to be taken into consideration for the improvement of well-being and health of women and should be integrated into primary healthcare services. Therefore, the present study aimed to determine the prevalence of sexual dysfunction in postpartum women, and the relationship between sexual dysfunction, depression and some risk factors.

## Methods

### Design

This cross-sectional study was conducted between March 2017 and December 2017 in Kocaeli, a province in Turkey.

### Sample

The study population comprised postpartum women who had given birth during the previous 2-12 months in Kocaeli University Faculty of Medicine Department of Obstetrics and Gynecology.

The minimum sample size was calculated with the PASS (Power Analysis and Sample Size) 11 Statistical Software (NCSS LLC, Kaysville, Utah, USA). The single report by Acele and Karacam<sup>21</sup> showed that 91.3% of postpartum women in Turkey reported sexual dysfunction. On the other hand, in studies carried out worldwide, the rate of sexual dysfunction in the postpartum women ranged from 20% to 76%<sup>8,12,13,15</sup>. Therefore, the minimum sample size was calculated using the following formula.

$$n = (z_{\alpha/2})^2 P(1-P) / d^2$$

Based on this formula<sup>22</sup>, the minimum sample size was calculated as n= 384 by using p= 0.5, 1-P= 0.5,  $z_{\alpha/2}$ = 1.96, d= 0.05, and  $\beta$ = 0.80 for the prevalence of sexual dysfunction. To achieve the minimum sample size, the gynecology and

obstetrics clinic register was examined, and the data on how to contact the women who gave birth 2-12 months were obtained. According to the birth records of this hospital, the number of the women in the 2–12 months postpartum period was 1080, and all women were invited to complete the online questionnaire, if they met the following inclusion criteria. The inclusion and exclusion criteria for this study were based on the objectives of the study and the literature review. The inclusion criteria were as follows: aged  $\geq 18$  years old (the legal age of consent is 18 years in Turkey), aged  $\leq 40$  years old (as they are more likely to experience premenopausal and perimenopausal changes, and their sexual function decreases with age), giving birth 2–12 months ago to a live baby, delivery at week  $\geq 37$ , having a regular sexual partner, not currently pregnant, not having any obstetric/neonatal complications related to the current birth. The exclusion criteria were as follows: being clinically diagnosed with a physical or psychiatric illness, taking antipsychotic medicine.

A total of 622 responses were received. Of these, 92 responses were excluded; 53 women did not answer all the questions, and 39 did not comply with the inclusion criteria. Reasons for non-compliance were: 8 were pregnant, 14 were  $>40$  years old, 12 had given birth in week 36 or earlier, 5 used antipsychotic medication. Therefore, responses from 530 women were considered for analysis.

### **Instruments**

Data were collected with the Personal Information Form, Index of Female Sexual Function and Edinburgh Postnatal Depression Scale.

**Personal Information Form:** The form consists of 22 questions on socio-demographic characteristics such as age, partner's age, education level, employment status, economic status, length of marriage, and on the obstetric and clinical characteristics such as the history of a physical-psychiatric disease, the presence of obstetric/neonatal complications, high risk pregnancy or not, the type of delivery, breastfeeding status, return of menstruation,

presence of dyspareunia, and family planning method used.

**Index of Female Sexual Function (IFSF):** The IFSF was developed by Kaplan *et al.*<sup>23</sup> to determine the women's sexual functions in the last 4 weeks. The Turkish validity and reliability study of the scale was conducted by Yilmaz and Eryilmaz and its Cronbach's alpha value was reported as 0.82<sup>24</sup>. The five-point Likert-type scale consisted of 9 items and the following 6 subscales: quality of sexual intercourse, lubrication, sexual desire, sexual satisfaction, orgasmic function, and clitoral sensitivity. The responses were rated between 1 (almost never or never) and 5 (almost always or always). Zero points are given to those who had not had sexual intercourse in the last month. The total score was calculated by summing the scores for each subscale. The minimum and maximum possible scores to be obtained from the scale were 5 and 45 respectively. Women with a score of  $\leq 30$  are considered to suffer sexual dysfunction<sup>24</sup>.

The Cronbach alpha reliability coefficient of the scale was calculated as 0.89 in this present study.

**Edinburgh Postnatal Depression Scale (EPDS):** The scale was developed by Cox and Holden<sup>25</sup> to determine the risk of developing postpartum depression in women. The four-point Likert type scale is a self-assessment scale and consists of 10 items. The lowest and highest possible scores to be obtained from the scale were 0 and 30 respectively. The Turkish validity and reliability study of the scale was performed by Engindeniz *et al.* The cut-off score of the scale was calculated as 12. Individuals with a score of  $\geq 13$  were considered at risk for depression<sup>26</sup>. In this present study, Cronbach alpha reliability coefficient of the scale was calculated as 0.93.

### **Application**

Participation in this anonymous study was voluntary. Women were phoned and invited to complete the online questionnaires. Then, the link to the study web site was sent via a message to the women who were called. The first pages of the study website provided information about the

study, including anonymity and confidentiality of the responses. No credentials were requested; thus, the confidentiality of the responses was protected. Participants were informed that they provided their consent by completing and submitting the online questionnaire and were then directed to the multisession questionnaire. The questionnaire was designed to take approximately 20 minutes to complete. The study website was active between March 2017 and December 2017.

### **Data analysis**

To analyze the data, the SPSS 16.0 software (SPSS, Inc., Chicago, IL, USA) was used. For the analysis of the data, descriptive statistics and the Chi-square test were used. Pearson correlation analysis was used to determine the relationship between sexual dysfunction and postnatal depression because the data showed a normal distribution according to the Kolmogorov–Smirnov test<sup>27</sup>. The results were assessed at the significance level of  $p < 0.05$ .

### **Results**

Of the participants, 54.2% were in the 25-34 age group, 42.5% were primary school graduates, 63.4% were unemployed, 58.3% reported their economic status as middle class, and 94.9% were married for 1-5 years. Of the participants' spouses, 68.1% were in the age group of 25-34, 43.8% were university graduates and all were employed at a paid job.

The distribution of some variables affecting the sexual life of the participating postpartum women is given in Table 1. Of them, 20.0% had high risk pregnancy, 61.7% underwent caesarean section, and 94.3% breastfed their babies. Sexual life of 80.6% of the participants were adversely affected in the postpartum period, and among the causes were fatigue (65.5%), vaginal dryness (58.5%), insomnia and lack of time (54.5%), not being able to be alone with the husband (49.4%), breast problems (44.2%), and perineal pain (30.6%). Of the participants, 86.4% shared the same bed with their husbands, 82.3% slept in the same room with the baby, 50.2% had

dyspareunia, 73.2% used a family planning method and 54.3% used a condom as the family planning method. In 52.3% of them, menstrual periods returned.

In the study, the mean scores the participants obtained from the Index of Female Sexual Function was  $23.89 \pm 9.16$ , and 74.3% of the participants suffered sexual dysfunction. In addition, the mean score they obtained from the Edinburgh Postnatal Depression Scale was  $11.23 \pm 2.30$ , and 24.7% of them were at risk for postnatal depression (Table 2).

The distribution of sexual dysfunction in the participants according to some characteristics is shown in Table 3. As is seen in the table, the prevalence of sexual dysfunction was found to be statistically significant in women who were high school graduates, who reported their economic status as middle class, who had a history of high risk pregnancy, whose menstruation did not return, who had dyspareunia, who did not use a family planning method, who used withdrawal as a family planning method and who were at-risk for postnatal depression ( $p < 0.05$ ).

Pearson's correlation analysis revealed a moderate negative correlation between Index of Female Sexual Function and Edinburgh Postnatal Depression Scale ( $r^2: -0.601, p < 0.01$ ).

### **Discussion**

Although sexual dysfunction and depression are among the main problems experienced in the postpartum period, they are often overlooked by healthcare professionals<sup>2,4</sup>. In the present study aimed at determining sexual dysfunction and factors affecting sexual dysfunction in postpartum period, 74.3% of the participating women experienced sexual dysfunction. This result shows that the prevalence of sexual dysfunction in postpartum women cannot be neglected. In the present study, most of the women stated that their sexual lives were adversely affected due to fatigue, vaginal dryness, insomnia and perineal pain they experienced. Although the interest in the evaluation of sexual life during the postpartum period has increased in recent years, sexuality, which is considered as a private matter and thus

**Table 1:** Some variables affecting women's postpartum sexual life in Kocaeli, Turkey

Variables	n	%
<b>History of pregnancy</b>		
High risk pregnancy	106	20.0
Low risk pregnancy	424	80.0
<b>Type of delivery</b>		
Vaginal delivery	203	38.3
Caesarean section	327	61.7
<b>Breastfeeding</b>		
Yes	500	94.3
No	30	5.7
<b>Whether the sexual life was affected during the postpartum period</b>		
Yes	427	80.6
No	103	19.4
<b>Factors affecting sexual life during the postpartum period*</b>		
Fatigue	347	65.5
Vaginal dryness	310	58.5
Insomnia	289	54.5
Lack of time	289	54.5
Not being able to be alone with the husband	262	49.4
Breast problems	234	44.2
Perineal pain	162	30.6
<b>Sharing the same bed with the husband</b>		
Yes	458	86.4
No	72	13.6
<b>Sharing the same room with the baby</b>		
Yes	436	82.3
No	94	17.7
<b>Return of menstrual periods</b>		
Yes	277	52.3
No	253	47.7
<b>Dyspareunia</b>		
Yes	266	50.2
No	264	49.8
<b>Using a family planning method</b>		
Yes	388	73.2
No	142	26.8
<b>The family planning method used (n=388)</b>		
Condom	207	53.4
Withdrawal	132	34.0
Intra uterine device	49	12.6

\* More than one option was marked.

**Table 2:** Means and standard deviations for the IFSF, and EPDS

Scales	Mean ± SD	Min–Max	n (%)
IFSF	23.89±9.16	5–39	
IFSF Grouping			
≤30 There are sexual dysfunction			394 (74.3)
>30 No sexual dysfunction			136 (25.7)
EPDS	11.23±2.30	0–21	
EPDS Grouping			
≤12 No postnatal depression			399 (75.3)
≥13 There are postnatal depression			131 (24.7)

IFSF: Index of Female Sexual Function; EPDS: Edinburgh Postnatal Depression Scale.

**Table 3:** Distribution of sexual dysfunction according to some characteristics in postpartum women in Kocaeli, Turkey

Variables	Sexual dysfunction present		Sexual dysfunction not present		$\chi^2$	<i>p</i>
	n	%	n	%		
<b>Age</b>						
18–24 years	148	37.6	54	39.7	0.937	0.626
25–34 years	213	54.1	74	54.4		
35–40 years	33	8.4	8	5.9		
<b>Education level</b>					15.391	<0.001
Primary school	162	41.1	63	46.3		
High school	117	29.7	18	13.2		
University	115	29.2	55	40.4		
<b>Economic status</b>					7.965	0.019
High class	58	14.7	31	22.8		
Middle class	243	61.7	66	48.5		
Low class	93	23.6	39	28.7		
<b>Length of marriage</b>					0.878	0.234
1–5 years	376	95.4	127	93.4		
≥ 6 years	18	4.6	9	6.6		
<b>History of pregnancy</b>					3.205	0.045
High risk pregnancy	86	21.8	20	14.7		
Low risk pregnancy	308	78.2	116	85.3		
<b>Type of delivery</b>					0.354	0.310
Vaginal delivery	148	37.6	55	40.4		
Caesarean section	246	62.4	81	59.6		
<b>Breastfeeding</b>					0.090	0.479
Yes	371	94.2	129	94.9		
No	23	5.8	7	5.1		
<b>Sharing the bed with husband</b>					0.019	0.510
Yes	340	86.3	118	86.8		
No	54	13.7	18	13.2		
<b>Sharing the room with baby</b>					0.001	0.545
Yes	324	82.2	112	82.4		
No	70	17.8	24	17.6		
<b>Return of menstrual periods</b>					98.798	<0.001
Yes	156	39.6	121	89.0		
No	238	60.4	15	11.0		
<b>Dyspareunia</b>					16.391	0.003
Yes	212	53.8	54	39.7		
No	182	46.2	82	60.3		
<b>Using a family planning method</b>					5.136	<0.001
Yes	271	68.8	117	86.0		
No	123	31.2	19	14.0		
<b>Used family planning method</b>					13.789	0.001
Condom	133	49.1	74	63.2		
Withdrawal	108	39.8	24	20.5		
Intra uterine device	30	11.1	19	16.3		
<b>Postnatal depression</b>					12.961	<0.001
Yes	113	28.7	18	13.2		
No	281	71.3	118	86.8		

hidden by most women, is neglected in clinical practices<sup>4,8</sup>. However, healthcare professionals play a key role in the prevention, evaluation, and

treatment of postpartum sexual concerns during the postpartum period. So, postpartum sexual counseling should be the part of the prenatal and

postnatal follow-up to improve women sexual health and quality of life<sup>4,28,29</sup>.

The analysis of the factors related to sexual dysfunction, the other dimension of the study, revealed that education level affected the prevalence of sexual dysfunction and that sexual dysfunction was more prevalent in high school graduate women. In the literature, there is no consensus on the effect of education level on female sexual dysfunction. While the prevalence of sexual dysfunction decreased as the education level increased in some studies<sup>3,30,31</sup>, in some studies, the prevalence of sexual dysfunction increased as the education level increased<sup>14,32</sup>, and in some other studies, no relationship was determined between the education level and sexual dysfunction<sup>8,12,13</sup>. This may have resulted from the difference in research designs, age groups, social, cultural and economic factors, partners' tendency, inadequate or incorrect sex-related knowledge. Thus, more studies should be conducted to explain what this difference stems from.

In the present study, sexual dysfunction was more prevalent in the participants who reported their economic status as middle class. In the literature, findings about the effect of economic status on sexual life vary from one study to another. While some studies indicate that there is no relationship between the economic status and sexual dysfunction<sup>13,33</sup>, some studies report that low income level is a variable that increases sexual dysfunction<sup>3,30,31</sup>. Financial difficulties affect the relationship between spouses and thus can cause sexual dysfunction<sup>31</sup>.

One of the most important variables affecting the prevalence of sexual dysfunction is the history of high-risk pregnancy. Obstetrics complications (antepartum bleeding, fetal conditions, etc.), medication use, limited mobility, fear of harming to the baby, fear of premature birth, psychological burden of having a high risk pregnancy, social myths and lack of knowledge related to high risk pregnancy negatively affect the sexual life of women<sup>34,35</sup>. Consistent with the literature, sexual dysfunction was more prevalent among women with the history of high risk pregnancy<sup>34,36,37</sup>. This result suggests that the

sexual problems experienced during pregnancy continue after pregnancy. Therefore, evaluation of women in terms of sexual function both during pregnancy and during the postpartum period gains importance.

In the present study, sexual dysfunction was more prevalent in women whose menstruation did not recommence and who did not use a family planning method. Similarly, Khajehei *et al.*<sup>8</sup> reported that women who did not have regular menstrual periods after birth suffered sexual dysfunction more. This result can be explained by the fact that women whose menstrual periods do not return lack sexual desire and experience sexual dysfunction due to their high prolactin level and their concerns that they can become pregnant again. On the other hand, the family planning method used can affect the sexual life of spouses and if the woman trusts the family planning method they use, then their satisfaction of sexual intercourse increases<sup>38</sup>. In the present study, it was determined that sexual dysfunction was more common in women using the withdrawal method. The withdrawal method which the most widely used traditional contraceptive method in Turkey is not a medical method and as the partner has to withdraw at the peak point of the sexual intercourse it prevents reaching sexual satisfaction and causes post intercourse tension and for that reason has negative effects on sex life<sup>39</sup>.

Pregnancy, labor and birth are risk factors for the development of postpartum dyspareunia<sup>34</sup>. Damage to pelvic muscles during birth, tear and episiotomy, instrumental birth, hormonal changes, vaginal dryness and relationship issues causes dyspareunia and thus sexual dysfunction<sup>1,2,4,14</sup>. In the present study, sexual dysfunction was more prevalent in women with dyspareunia, which is consistent with the results in the literature<sup>3,5,7</sup>. Early diagnosis of dyspareunia in the postpartum period may contribute to the improvement of sexual function in women.

Postnatal depression is a non-psychotic depressive disorder that occurs after childbirth and is characterized by serious mood changes, sadness, hopelessness, feeling of worthlessness, fatigue, and insomnia<sup>17,18</sup>. Nearly one out of every four

women in the postpartum period experiences depressive symptoms<sup>8,18,19</sup>. In the present study, 25% of the women were at risk for postnatal depression. Postnatal depression is another risk factor for sexual dysfunction. In the literature, it is stated that symptoms of postnatal depression affect women's sexual functioning negatively and that there is a mutual association between postnatal depression and sexual dysfunction<sup>8,14,18,20</sup>. In the current study, the sexual dysfunction rate was higher in the participants with postnatal depression, and there was a moderate relation between them, which is consistent with the results in the literature. Mental health is important for maintaining quality of life for women, their families and society<sup>18</sup>. Therefore, health professionals should routinely screen for signs of antenatal and postnatal depression and assess women's sexual function to increase their quality of life.

### Study Limitations

The study was conducted in a single department of obstetrics and gynecology in Kocaeli, and the findings may not be generalizable to the entire population of Turkish postpartum women. The participants completed an online questionnaire, therefore, women without access to the computer were not included in the study, which was another limitation of the study. Also, the study was based on self-reported measures with no structured interview. However, as the study was anonymous with no face-to-face contact, the participants were thought to give more honest and reliable answers in cases where sexuality was perceived as taboo and women experienced problems such as mental illnesses, myths or stigma. The other limitation of the study is that factors such as medical condition, medication use, marital adjustment, domestic violence, cultural factors that may be related to sexual dysfunction were not investigated. Due to its cross-sectional nature, the present study was inadequate to explain the causal relationship between the variables affecting sexual dysfunction, which was another limitation of the

study. Longitudinal studies could provide more insight into the underlying mechanism of the relationships found in this study.

### Ethical Approval

The study protocol was designed in compliance with the principles of the Declaration of Helsinki. Prior to data collection, necessary approvals and permissions were obtained from the Kocaeli University Clinical Research Ethics Committee (Decision date and no. 2017/36) and General Secretariat of the Public Hospitals Union, respectively. Women provided consent by completing and submitting the online questionnaire.

### Conclusion

In the current study, 75% of the participants suffered sexual dysfunction in the postpartum period and 25% of them were at risk for postnatal depression. The risk factors identified in the present study indicate that the female sexual dysfunction is a multidimensional problem with physical, emotional and social aspects. In the light of these results, it was concluded that health professionals should holistically evaluate all women in the postpartum period and give training and counseling services to them. Healthcare professionals can assess the sexual and mental problems of women, especially the high-risk groups indicated also in this study, via short screening scales during routine postpartum follow-ups, and they can refer women for early diagnosis and treatment. In addition, to better explain the causal relationship between female sexual dysfunction and affecting factors in the postpartum period and to generalize the results to the community, it is recommended that longitudinal studies with larger samples should be performed.

### Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Contribution of Authors

Study conception/design: FAY, DA, YAA, RO, ND; Data collection/analysis: RO, ND, DA; Drafting of manuscript: FAY, DA; Critical revisions for important intellectual content: FAY, DA, YAA; Supervision: DA, FAY.

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