

■ Original Article

Evaluating the sexual function differences among the infertile women

İnfertil kadınların seksüel fonksiyon farklılıklarının değerlendirilmesi

Tugba GURBUZ*¹ , Nefise Tanridan OKCU² , Oya GOKMEN³ 

¹ Medistate Hospital, Gynecology and Obstetric Clinic, Istanbul/TURKEY

² Adana City Training and Research Hospital, Gynecology and Obstetric Clinic, Adana/TURKEY

³ Medistate Hospital, Gynecology and Reproductive medicine, Istanbul/TURKEY

Abstract

Aim: This study aimed to investigate the frequency of sexual dysfunction among infertile women and evaluate the difference between the primary and secondary infertility groups in terms of menstrual pain, dyspareunia, smoking and night shift variables based on the Female Sexual Function Index (FSFI) score.

Material and Methods: Seventy women in the primary group and 29 women in the secondary group participated in this study. All participants were asked FSFI. The questionnaire containing duration of marriage, total FSFI score, menstrual pain, dyspareunia, smoking and night shift variables and also the demographic characteristics of patients such as age, infertility time and body mass index (BMI) was given to the subjects. SPSS 23.0 program was used for data statistical analysis. Pearson's Chi-squared test was used to compare categorical variables. Independent student t-test analysis was performed on binary variables to compare continuous variables between the groups.

Results: 19.2% of both groups had marriage duration of 1-3 years, 54.5% of them had marriage duration of 4-6 years and 26.3% of them had marriage duration of 7 years above. The mean age of the patients in the study was 34,58±4,25 years. The prevalence of sexual dysfunction among the women was 32.9 (n = 23 of 70) and 55.2% (n = 16 of 29) in primary infertile and secondary infertile women, respectively, but it did not show a statistically significant difference between the two groups.

Conclusion: There was no significant difference between both groups in terms of menstrual pain, dyspareunia, smoking and night shift variables but the difference was statistically significant in terms of marriage duration. The mean FSFI domains were not also significantly different between the two groups. There was also no significant relationship between age, infertility time and BMI of both groups and sexual dysfunction.

Keywords: infertility; female sexual function index; female sexual dysfunction

Corresponding author*: Tuğba Gürbüz, Medistate Hospital, Gynecology and Obstetric Clinic, Istanbul/TURKEY

E-mail: drtgurbuz@hotmail.com

ORCID: 0000-0003-3555-3767

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Öz

Amaç: Bu çalışmada, infertil kadınlar arasındaki cinsel işlev bozukluğu sıklığı araştırıldı ve Kadın Cinsel Fonksiyon İndeksi (KCFI) skoruna göre menstrüel ağrı, disparoni, sigara içme ve gece vardiyası değişkenleri açısından primer ve sekonder infertilite grupları arasındaki fark değerlendirildi.

Gereç ve Yöntemler: Çalışmanın primer grubuna 70 kadın ve sekonder grubuna 29 kadın katılmıştır. Tüm katılımcılardan geçerli ve güvenilir bir KCFI doldurmaları istendi. Katılımcılara evlilik süresi, toplam KCFI skoru, adet ağrısı, disparoni, sigara ve gece vardiyası değişkenlerinin yanı sıra hastaların yaş, kısırlık süresi ve vücut kitle indeksi (VKİ) gibi demografik özelliklerini içeren anket yapıldı. Veri istatistiksel analizi için SPSS 23.0 programı kullanıldı. Kategorik değişkenlerin karşılaştırılmasında Pearson ki-kare testi kullanıldı. Gruplar arası sürekli değişkenleri karşılaştırmak için ikili değişkenler üzerinde bağımsız t-testi analizi yapılmıştır.

Bulgular: Her iki grubun %19.2'si 1-3 yıl evlilik süresine, %54.5'i 4-6 yıl evlilik süresine ve % 26.3'ü 7 yıl yukarıda evlilik süresine sahiptir. Çalışmadaki hastaların yaş ortalaması $34,58 \pm 4,25$ idi. Primer infertil ve sekonder infertil kadınlarda kadınlar arasında cinsel işlev bozukluğu prevalansı sırasıyla %32.9 (n = 23/70) ve %55.2 (n = 16/29) idi, ancak iki grup arasında istatistiksel olarak anlamlı bir fark tespit edilmemiştir.

Sonuç: Her iki grup arasında menstrüel ağrı, disparoni, sigara içme ve gece vardiyası değişkenleri açısından anlamlı fark yoktu, ancak bu fark evlilik süresi açısından istatistiksel olarak anlamlı olarak tespit edildi. KCFI oranlarında iki grup arasında anlamlı olarak fark saptanmadı. Her iki grubun yaş, infertilite zamanı ve VKİ ile cinsel işlev bozukluğu arasında anlamlı bir ilişki saptanmadı.

Anahtar kelimeler: kısırlık; kadın cinsel fonksiyon ölçeği; kadın cinsel işlev bozukluğu

Introduction

Infertile women may experience higher sexual dysfunction than fertile women may. One of the main sources of anxiety, stress, and depression is infertility, which negatively affects sexual health [1]. Quality of life, emotional health, and sexual relationship of the couples are negatively affected by infertility [2,3]. Women may be more psychosexually affected by infertility than men [4]. One of the most important components of social health and quality of life is sexual function [5]. Daniluk et al. [6] defines dysfunctions as problems in case such problems disturb the partners. Infertility is defined as the women's inability to conceive one year after regular unprotected sexual activity [7,8].

There are different reasons particularly environmental changes for the decreasing rate of fertility rate all over the world [9]. Mascarenhas et al. [10] in a study conducted on global infertility rates in 190 countries from 1990 to 2010 showed that there were 48.5 million infertile couples among whom 19.2 million had primary infertility, and 29.3 million had secondary infertility and the research results show that the couples in developed countries had higher primary infertility while the couples in developing countries had higher secondary infertility. The inherent or acquired circumstances affecting illnesses such as extragenital etiology, the normal reproductive organs such as genital etiology or the psychological factors among the females can impair the women's reproductive function [11,12].

Smith et al. [13] states that infertility as prevalent health

problems negatively affects about 20% of all couples and there is an association between infertility and significant psychosocial effect, which is regarded as a stressor [14]. Just a few studies have investigated the impact of infertility on sexual dysfunction of females, demonstrating that infertile women have sexual complaints and that depression, anxiety, and stress were more common among these women [15]. There are several domains for sexual dysfunction. Based on the diagnostic questionnaire Female Sexual Function Index (FSFI), there are six sexual dysfunctions sub types in females including desire (the interest to have sexual experience), arousal (having the interest to have sexual relation before stimulation), lubrication, orgasm (reaching organism after arousal and stimulation), sexual satisfaction, and pain which are measured based on the self-report of the patients.

The study aimed to investigate the frequency of sexual dysfunction among infertile women and evaluate the difference between the primary and secondary infertility groups in terms of menstrual pain, dyspareunia, smoking and night shift variables based on the FSFI score.

Material and Methods

This study was approved by Research Ethics Committee of Beykoz University (Permission granted /CAAE number: 2019/30.09, Decision no: 03). And all procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration



and its later amendments or comparable ethical standards. Informed consent was obtained from each patient. 99 women with primary infertility and secondary infertility participated in this study from October 2019 to February 2020. The participants were divided into two groups: primary group and secondary group. The women who were never able to conceive were regarded as primary infertility group and the women who had conceived before were regarded as secondary infertility group.

The primary group included 70 women and the secondary group included 29 infertile women. All participants presented the informed consent before enrolling in the study.

FSFI scale as a standardized and validated self-report was applied for measurement of the sexual dysfunction. Six domains including desire (the interest to have sexual experience), arousal (having a desire for sexual relation followed by stimulations), lubrication, orgasm (reaching orgasm after arousal and stimulation), satisfaction and pain measured based on patients' self-report were included in the FSFI score. Arousal (4 questions), desire (2 questions), orgasm (3 questions), satisfaction (3 questions), lubrication (4 questions), and pain (3 questions) are the six domains of the scale items. The sum of all scores obtained in all six domains was the total FSFI score. Better sexuality will result from a higher score. The total FSFI score is between 2 and 36. Female sexual dysfunction is a score below ≤ 26.5 [16].

Besides, the questionnaire containing the marriage duration

of primary and secondary groups, total FSFI score, menstrual pain, dyspareunia, smoking and night shift variables and also the demographic characteristics of patients in primary and secondary groups such as age, infertility time and body mass index (BMI) was given to the subjects.

Statistical Analysis

SPSS 23.0 program was used for data statistical analysis. Categorical measurements are summarized in numbers and percentages, average, deviation, and minimum to maximum for continuous variables. Categorical variables were compared using Pearson's Chi-squared test. Independent student t-test analysis was performed on binary variables by checking distributions to compare continuous variables between groups. Statistical significance was 0.05 in all tests. The initial result of this study was the dysfunction prevalence difference between the primary and secondary groups. Then, the sexual function subgroup scores were also included to evaluate all women's sexual function aspects.

Results

In this study, infertile women were divided into two groups. One group had primary fertility and another group has secondary infertility. Seventy women were included in the primary group, and 29 women were included in the secondary group. Table 1 shown that the difference between the primary and secondary groups in terms of marriage duration of primary and secondary groups, total FSFI score, menstrual pain, dyspareunia, smoking and night shift variables.

Table 1. Examination of the marriage duration of primary and secondary groups, total FSFI score, menstrual pain, dyspareunia, smoking and night shift variables (n: 99) *

		Infertility		Total(n:99) n(%)	p-value
		Primary (n: 70) n(%)	Secondary (n: 29) n(%)		
Marriage Period	1-3 years	18 (25,7)	1 (3,4)	19 (19,2)	0,034*
	4-6 years	36 (51,4)	18 (62,1)	54 (54,5)	
	7 years above	16 (22,9)	10 (34,5)	26 (26,3)	
Total FSFI Score	Insufficient	23 (32,9)	16 (55,2)	39 (39,4)	0,109
	Moderate	32 (45,7)	8 (27,6)	40 (40,4)	
	Sufficient	15 (21,4)	5 (17,2)	20 (20,2)	
Menstrual Pain	Yes	34 (48,6)	13 (44,8)	47 (47,5)	0,454
	No	36 (51,4)	16 (55,2)	52 (52,5)	
Dyspareunia	Yes	36 (51,4)	10 (34,5)	46 (46,5)	0,093
	No	34 (48,6)	19 (65,5)	53 (53,5)	
Cigarette	Yes	37 (52,9)	12 (41,4)	49 (49,5)	0,207
	No	33 (47,1)	17 (58,6)	50 (50,5)	
Night Shift	Yes	20 (28,6)	5 (17,2)	25 (25,3)	0,178
	No	50 (71,4)	24 (82,8)	74 (74,7)	

* Pearson's Chi-squared

25.7% of the women in the primary group and 3.4% of the women in the secondary group had a marriage duration of 1-3 years, which was significantly different. 51.4% of the women in the primary group and 62.1% of the women in the secondary group had a marriage duration of 4-6 years. 22.9 % of the women in the primary group and 34.5% of the women in the secondary group had a marriage duration of 7 years above. There was a statistically significant difference between infertile patients in terms of their marital duration ($p=0.034$, $p<0.05$). Based on the bilateral comparisons, the number of those married for 4 to 6 years in the primary group was higher than that in the secondary group.

Total FSFI score was divided into three insufficient, moderate and sufficient scores. The insufficient, moderate and sufficient total FSFI scores in the primary group were 32.9%, 45.7%, and 21.4%, respectively while the insufficient, moderate and sufficient total FSFI scores in the secondary group were 55.2%, 27.6 and 17.2%, respectively. The mean insufficient, moderate and sufficient total FSFI scores in the primary group and the secondary group were 39.4%, 40.4%, and 20.2%, respectively. The primary group had a higher moderate and sufficient total FSFI score than that in the secondary group ($p=0.109$), though the difference between the primary group and secondary group in terms of sexual dysfunction was not statistically significant ($p>0.05$). In other words, the frequency of sexual dysfunction demonstrated no statistically significant difference between the two groups.

Figure 1 shows that the insufficient total FSFI score in the primary group was lower than that in the secondary group but the moderate and sufficient total FSFI scores in the primary group were higher than those in the secondary group. However, the difference between them is not significant. The moderate total FSFI score (40.4%) was the most frequent of the insufficient, and moderate total FSFI scores in both groups. The prevalence of sexual dysfunction among the women was 32.9 ($n = 23$ of 70) and 55.2% ($n = 16$ of 29) in primary infertile and secondary infertile women, respectively but the prevalence of sexual dysfunction did not show a statistically significant difference between the two groups.

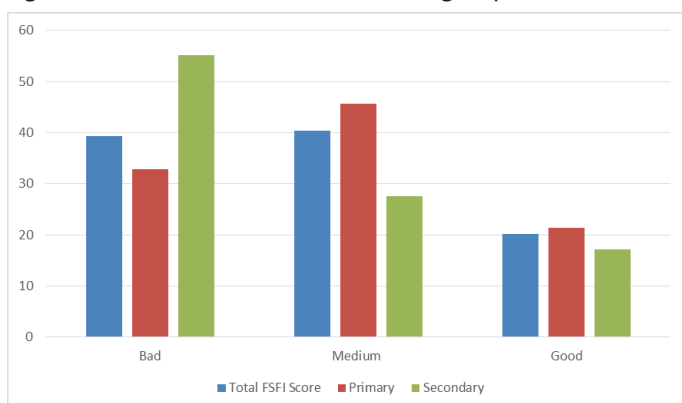


Figure 1. Frequency of sexual dysfunction in infertile patients

In terms of the menstrual pain, the primary group had higher menstrual pain than the secondary group had but these two groups showed no statistically significant difference ($p>0.05$). The menstrual pain in the primary group was 48.6% and in the secondary group 44.8% with the mean of 47.5%, which showed no statistically significant difference.

The primary group had higher dyspareunia than the secondary group, but these two groups showed no statistically significant difference ($p>0.05$). Dyspareunia rates in the primary and secondary groups were 51.4% and 34.5%, respectively, showing that there was dyspareunia in the primary group but this difference was not statistically significant.

The smoking rate of patients was 49.5%. Patients in the primary group were found to smoke more than the patients in the secondary group but these two groups showed no statistically significant difference ($p>0.05$).

25.3% of the patients were found to work at the night shift. Patients in the primary group were found to work at night shifts more than the patients in the secondary group. However, the difference between them was not statistically significant ($p>0.05$).

The demographic characteristics of the groups including age, infertility time and BMI are shown in Table 2.

The women's median age was 34,44 years (from 25 to 43 years) in the primary group and 34,90 years (from 28 to 45 years) in the secondary group. The patients' mean age was $34,58 \pm 4,25$ years. The age distribution of patients in the primary and secondary groups was similar ($p>0.05$).

Infertility time was found to be shorter in the primary group than in the secondary group. However, the difference between them was not statistically significant ($p>0.05$).

The average BMI of the patients was 24.82. BMI of the patients in the primary group was lower than that of patients in the secondary group while they did not show a statistically significant difference ($p>0.05$). Table 3 shows the mean FSFI scores in primary and secondary infertile women.

The desire, orgasm and satisfaction scores of patients in the primary group were found to be lower than those of patients in the secondary group. However, the difference between them was not statistically significant ($p>0.05$).

The arousal and pain scores of the patients in the primary group were higher than those in the secondary group. However, the difference between them was not statistically significant ($p>0.05$).

The lubrication score was found to be similar in the primary and secondary groups ($p>0.05$). The total FSFI scores of orgasm, satisfaction, and pain were the lowest as the most prevalent sexual dysfunctions.



Table 2. Examination of the demographic characteristics of patients in primary and secondary groups

	Infertility		Infertility	p-value
	Primary (n: 70)	Secondary (n: 29)		
	Mean±SD(Min-Max)	Mean±SD (Min-Max)		
Age	34,44±4,38 (25-43)	34,90±3,94 (28-45)	34,58±4,25 (25-45)	0,631
Infertility time	2,90±1,58 (1-9)	3,34±1,69 (1-8)	3,03±1,62 (1-9)	0,217
BMI	24,67±2,02 (21,6-30,1)	25,19±2,45 (21,3-31,2)	24,82±2,16 (21,3-31,2)	0,282

* Independent student t-test

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	Primary (n: 70)	Secondary (n: 29)		
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Age	34,44±4,38 (25-43)	34,90±3,94 (28-45)	34,58±4,25 (25-45)	0,631
Infertility time	2,90±1,58 (1-9)	3,34±1,69 (1-8)	3,03±1,62 (1-9)	0,217
BMI	24,67±2,02 (21,6-30,1)	25,19±2,45 (21,3-31,2)	24,82±2,16 (21,3-31,2)	0,282

* Independent student t-test

Table 3. Examination of patients in primary and secondary groups in terms of desire, arousal, lubrication, orgasm, satisfaction and pain score

	Infertility			P value
	Primary (n: 70)	Secondary (n: 29)	Total(n: 99)	
	Mean±SD (Min-Max)	Mean±SD (Min-Max)	Mean±SD (Min-Max)	
FSFI desire score	3,52±1,36 (0,6-6,0)	3,69±1,07 (1,8-5,4)	3,57±1,28 (0,6-6,0)	0,550
FSFI arousal score	3,79±1,15 (0,3-6,0)	3,67±1,69 (0,9-6,0)	3,76±1,32 (0,3-6,0)	0,701
FSFI lubrication score	3,33±1,27 (0,9-6,0)	3,35±1,36 (1,5-6,0)	3,34±1,29 (0,9-6,0)	0,956
FSFI orgasm score	2,88±1,41 (0-6,0)	3,03±1,19 (0-5,6)	2,92±1,35 (0-6,0)	0,617
FSFI satisfaction score	2,77±1,31 (0-5,2)	3,22±1,27 (1,2-5,6)	2,90±1,31 (0-5,6)	0,117
FSFI pain score	1,11±1,05 (0-5,4)	1,02-1,0 (0-3,2)	1,09±1,03 (0-5,4)	0,698

* independent student t-test

Discussion

Infertility is a problem which both partners face and couples undergo diagnostics, though the sexual function among the couples has been studied in only a few studies in the previous five years [17-19]. Most of the studies found that sexual dysfunction was prevalent among infertile women; a study which was published in 2014 used the FSFI to evaluate the sexual function of infertile women which was 25.7±4.6 [20].

Our study compares the two groups with primary infertility and secondary infertility in terms of frequency of sexual dysfunction. Our study shows that both groups with the statistically insignificant difference in insufficient total FSFI scores are at risk of sexual dysfunction and the desire, arousal, and the lubrication domains were the most affected domains of sexual function. Our study showed that the marriage duration was longer in primary infertile women than in secondary infertile women,

which is not in line with the results of a study by [15] who found that the marriage duration was longer in the secondary group than in a primary group. Keskin et al. [15] also stated that there were significantly lower satisfaction and orgasm domains of FSFI and total FSFI scores in the secondary group and showed that 76.5% of the secondary group and 64.8% of the primary group had sexual dysfunction while our study shows that the primary group and the secondary group did not show a statistically significant difference.

Our study shows that the number of those married for 4 to 6 years in the primary group was higher than that in the secondary group. Therefore, a statistically significant difference was found between the primary and secondary in terms of their marital duration ($p=0.034$, $p<0.05$).

In terms of total FSFI score, the primary group was at a lower risk of sexual dysfunction than the secondary group was but the frequency of sexual dysfunction did not show a statistically significant difference between the two groups.

Jain et al. [21] showed that sexual problems in the primary and secondary groups including orgasmic failure, dyspareunia, and decreased libido were the most prevalent problems. Our study shows that the primary group had higher dyspareunia than the secondary group, but these two groups did not show any statistically significant difference. Patients in the primary group were found to smoke more than the patients in the secondary group but, these two groups showed no statistically significant difference ($p>0.05$). It is also found that the primary group works at night shifts than the secondary group does. Our study shows that the primary group was more affected by infertility than the secondary group in terms of duration of the marriage, dyspareunia, smoking and night shift work.

In our study, also the variables of age, infertility time and BMI as the risk factors which may affect the sexual function in infertile women were investigated to see the effect of such variables on the primary and secondary groups' sexual dysfunction. The patients' age in the study was 34.58 years. There was a similar age distribution of patients in the primary and secondary groups showing that age was not a significant factor affecting the sexual dysfunction. The primary group has shorter infertility time than the secondary group had but the difference was not statistically significant. BMI of the patients in the primary group was lower than that of patients in the secondary group but the difference was not statistically significant. Our findings of BMI scores are compatible with the findings of the study by Keskin et al. [15] that there was no statistical difference between two infertile groups in terms of BMI and also mentioned that independent predictors of FSFI score were age and income but they did not differ significantly in primary and secondary

infertilities, which is in line with our study result.

Davari et al. [20] has compared the secondary and primary infertility women concluded that the women with secondary infertility were most seriously impaired, which is not in line with our study result showing that the secondary group and the primary group did not show a statistically significant difference. Shahraki et al. [22] found that there was significantly higher sexual dysfunction among women with primary infertility than in the secondary group and healthy ones, which is not in line with our study results.

According to Benksim et al. [23] the intersection of several demographic characteristics and medical factors caused primary and secondary infertilities. However, socio-economic status, age, duration of marriage of women had a significant effect leading to increased severity of secondary infertility. This is not supported by our study results that there was a similar age distribution of patients in the primary and secondary groups showing that age was not a significant factor affecting the sexual dysfunction but it is in line with our finding that a statistically significant difference was between the infertile patients in their marital duration.

A study by [24] showed a significant relationship between duration of infertility and the sexual dysfunction but no significant correlation between the sexual dysfunction and type of infertility was found, while our study shows that the primary group has shorter infertility time than the secondary group had but there is no significant relationship between the sexual dysfunction and type of infertility.

Davari et al. [20] found a significant negative correlation between total FSFI score and age, marriage duration and partner age and showed high sexual dysfunction in primary and secondary infertile women, and that women in the secondary group experience more sexual dysfunction than those in the primary group while our study results showed that only marriage duration was significantly different in both primary and secondary groups and that the primary and secondary groups showed no significantly different sexual dysfunctions.

The study by Yousef et al. [25] showed that sexual dysfunction of the primary group was 78.9% and that of the secondary group was 74.7% which was not a statistically significant difference. This is consistent with our study results. This is also in line with the study by Jamali, et al. [24] who found the sexual dysfunction prevalence to be 100% in secondary group and 94.9% in primary group and reported female sexual dysfunction to be more prevalent in the women with secondary infertility than in those with primary infertility, but no statistically significant difference was found.



Yousef et al. [25] also indicated a highly statistically significant relationship between BMI and sexual function of the infertile women, which is not consistent with our study result.

Considering the above comparisons, we can conclude that there is no significant difference between two primary and secondary groups in terms of secondary groups, total FSFI score, menstrual pain, dyspareunia, smoking and night shift variables but there is a significant difference between both groups in terms of marriage duration. In our study, the prevalence of sexual dysfunction among the women was 32.9 (n = 23 of 70) and 55.2% (n = 16 of 29) in primary infertile and secondary infertile women, respectively but the prevalence of sexual dysfunction did not show a statistically significant difference between the two groups. There was also no significant relationship between age, infertility time and BMI of both groups and sexual dysfunction. Some of the above results were consistent with our study results and some of them were not consistent with our study results but their studies and our study cannot conclude finally. The common point in all studies is that the prevalence of sexual dysfunction is quite high in women with primary infertility and secondary infertility.

Conclusion

The sexual dysfunction prevalence is quite high in women with primary infertility and secondary infertility and the insufficient total FSFI score of the primary was 55.2% and that of the secondary infertility was 32.9% but the primary and secondary groups showed no statistically significant difference. There was no statistically significant relationship between sexual dysfunction and the demographic characteristics of infertile women including age, infertility time and BMI. The desire, orgasm and satisfaction scores of patients in the primary group were lower than those of patients in the secondary group but they showed no statistically significant. Analyses of mean total FSFI and subgroup scores show that primary and secondary infertile women have no significant differences. It is also concluded that the primary group was more affected by infertility than the secondary group in terms of marriage duration, dyspareunia, smoking and night shift work but the difference between them was not statistically significant but in marriage duration. Therefore, it can be concluded that there is a significant association between marriage duration in both groups and sexual dysfunction.

This study can help evaluate infertile women's sexual function as a potential risk factor. Based on the infertility subtypes, we should carefully know the frequency of female sexual dysfunction and the difference between these two groups in terms of these subtypes. This study helps prevent sexual dysfunction development using psychological interventions and early

screening. Preventive strategies can be adopted in case the risk factors are known. This subject needs further studies.

Declaration of conflict of interest

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