

A multivariate analysis of the factors that influence the modification of sexual desire in oral hormonal contraceptive (OC) users

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ABSTRACT

Objectiv: This work studied the influencing factors of age, level of education, family planning awareness, relationship with partner, the age at which sexual relationships were initiated, parity, the method of contraceptive previously used, the type of contraceptive pill used and the duration of oral hormonal contraception (OC) use in relation to the modification of sexual desire in OC users. **Materials and Methods.** Prospective study of 760 OC users at the Family Planning Center "Marina Alta" in Alicante (Spain). A logistical regression analysis was carried out to study the relative risk of reduction in libido, taking other risk factors into account. **Results:** In the simple analysis, women who initiated sexual relationships between 18 and 25 years of age had a lower sexual desire in comparison with women who were sexually active before the age of 18 (OR = 2.11; CI: 1.15 - 3.91). Nulliparous women had a reduced sexual desire compared with those women that had given birth (OR = 2.32; CI: 1.41 - 3.82). An OC use of between 6 months and 1 year reduced sexual desire in comparison with a use of less than 6 months (OR = 0.24; CI: 0.09 - 0.64). In the multivariate analysis, age (OR = 1.12; CI: 1.01 - 1.21) and the use of OC within an initial 6 month to a year period (OR = 0.24; CI: 0.09 - 0.64) presented a statistically significant relationship with the modification of sexual desire. The level of education, family planning awareness, relationship with partner, the method of contraception previously used and the type of contraceptive pill prescribed showed no statistical significance with the modification of sexual desire in OC users. **Conclusions:** Sexual desire in OC users decreases as a woman's age increases and in an early stage of use in the first six months after

beginning OC treatment.

Keywords: Oral Contraceptive; Sexual Desire; Sex Hormones

1. INTRODUCTION

The human sexual response or libido is a complex phenomenon which combines biological factors, via hormonal stimuli, and psychosocial factors in the form of internal and external stimuli regulated by the central nervous system, resulting in a cascade of biochemical, hormonal and circulatory changes [1-4]. It is characterised by a desire to maintain or initiate sexual relationships and varies between human beings as it is subject to large fluctuations [4]. Its neuroanatomical and neurophysiological bases have yet to be accurately established [5,6] and to date no substance has been isolated with which a biological theory on the subject might be developed [7].

Contraception should not only be directed at avoiding unwanted pregnancy, yet also at favouring the development of the sexual facet of the human being, in whom it plays an integral and undeniably important role. The above factors are, therefore, two activities which are intrinsically linked and which the prescribing doctor should always take into account [7,8].

Studies of the evolution of sexual desire during the physiological menstrual cycle demonstrate an increase in this desire halfway through the cycle, coinciding with ovulation, and a decrease in the early luteal phase and a further increase in the late luteal phase [9]. The action mechanism of hormones is not totally clear [9,10] and although estroprogestatives are one of the influencing factors in sexual behaviour (decrease in interest, desire, etc), they are by no means the most important factor [10].

Likewise, some studies affirm the influence of age on sexual activity, demonstrating that female adolescents

present an increase in coital relationships compared with older women [11,12].

The aim of this work is to study the influencing factors of age, level of education, family planning awareness, relationship with partner, the age at which sexual relationships were initiated, parity, the method of contraceptive previously used, the type of contraceptive pill used and the duration of OC use in relation to the modification of sexual desire in OC users.

2. MATERIAL AND METHODS

Prospective study of 760 OC users, with no signs or suspicion of organic or psychological illness was carried out between January of 2000 to January of 2010 at the Family Planning Center "Marina Alta" in Alicante (Spain).

The general characteristics of these women were studied regarding to the age, level of education, family planning awareness, relationship with partner, age at which the sexual relationships were initiated, parity, the method of contraceptive previously used, the type of contraceptive pill prescribed, the duration of OC treatment and the modification of sexual desire. The established medical controls were carried out at 3, 6 and 12 months after commencing treatment.

The mean age of the women in this study was of 26.6 ± 4.1 years of age (with a range which oscillated between 15 and 34 years). 518 women (68.1%) had elementary education (basic education) and 231 women (30.4%) had an intermediate or higher level of university degrees. 87 women (11.4%) possessed no information on family planning (they are aware of various methods but practise coitus interruptus and use condoms with some reservation), 287 women (53%) had a basic awareness (they use condoms and know of the contraceptive pill and IUD) and 430 women (34.7%) were well informed (they know of almost all existing methods and have read literature on the subject). With regard to partner relationship, 644 women (84.8%) enjoyed a good relationship, 85 women (11.21%) qualified their relationship as average, and 15 (1.9%) as poor. 250 women (32.9%) initiated sexual relationships before 18 years of age, 85 women (62.2%) did so between 18 and 25 years of age whilst 15 women (2.4%) initiated sexual activity after the age of 25. 485 women (63.8%) were nulliparous whilst 274 (36.1%) were multiparous. 158 women (26.6%) used a preparation containing 30 micrograms of ethinylestradiol and 150 micrograms of desogestrel (Microdiol[®]), 202 women (20.8%) used 35 micrograms of ethinylestradiol and 2 milligrams cyproterone acetate (Diane[®]), 360 women (47.3%) were prescribed ethinylestradiol and triphasic levonorgestrel (Triagynon[®] and Triclor[®]) and 40 women (5.3%) received 30 micrograms of ethinylestradiol and 75 micrograms of gestodene (Gynovin[®] and Minu-

let[®]). 37 women (4.9%) used the product for less than 3 months, 287 women (37.8%) for less than a year and 430 women (56.5%) used the product for over a year.

With regard to a modification of sexual desire, the Female Sexual Function Index (FSFI) was used [13,14], which consisted of a questionnaire made available by the sexologist, in which each woman rated six main characteristics-sexual desire, subjective arousal, vaginal lubrication, orgasm, satisfaction and discomfort during coitus. A decrease in sexual desire was classified as slight, moderate and significant

In order to analyse the relative risk of the different OC on sexual desire independently of the presence of other risk factors, a logistical regression analysis was carried out, which adjusted the effect of the variables, preventing the presence of after effects and including the variables which could act as potential confusers. The data base and the computer processed analysis were carried out using the data analysis program "SSPS" (Statistical Package for Social Sciences) 6.1 version for Windows (licence N^o 707852).

3. RESULTS

The findings of the study revealed that 42 women (5.4%) experienced an increase in sexual desire, 182 women (23.6%) experienced a decrease and 536 women (70.3%) registered no modification of their sexual desire.

In the simple analysis, those women who initiated sexual relationships between 18 and 25 years of age registered a lesser sexual desire than those who became sexually active before the age of 18 (OR = 2.11; CI: 1.15 - 3.91). Nulliparous women showed a decrease in sexual desire in relation to women that had given birth (OR = 2.32; CI: 1.41 - 3.82). The use of OC within an initial 6 to 12 month period increased sexual desire compared to a use of less than 6 months (OR = 0.21; CI: 0.08 - 0.60) (**Table 1**).

The multivariate analysis revealed a statistically significant relationship between the modification of sexual desire and age (OR = 1.12; CI: 1.03 - 1.21) and the use of OC for 6 months to a year (OR = 0.24; CI: 0.09 - 0.64). The level of education, level of family planning awareness, partner relationship, the contraceptive method previously used and the type of contraceptive pill prescribed showed no statistical significance with the modification of sexual desire in OC users (**Table 2** and **Figure 1**).

4. DISCUSSION

Studies of the evolution of sexual desire during the physiological menstrual cycle demonstrate an increase in this desire halfway through the cycle, coinciding with ovulation, and a decrease in the early luteal phase and a further increase in the late luteal phase [15], with a higher levels

Table 1. Simple analysis of the modification of sexual desire in female oral hormonal contraceptive (OC) users.

		p	Odds Ratio	CI 95% OR
Level of studies	Elementary		1	1
	Intermediate/high	0.92	0.98	(0.57 - 1.66)
Family planning information	Nil		1	1
	Basic	0.53	1.29	(0.56 - 3.1)
	Good	0.98	1	(0.4 - 2.5)
Partner relationship	Good		1	1
	Average	0.36	1.37	(0.65 - 2.83)
	Poor	0.2	2.3	(0.5 - 9.1)
Age SR initiated	< 18 years		1	1
	18 to 25 years	0.01	2.11	(1.15 - 3.91)
	> 25 years	0.4	1.83	(0.27 - 9.47)
Parity	Yes		1	1
	No	< 0.001	2.32	(1.41 - 3.82)
Type of OC	30 mcg EE + 150 mcg DG		1	1
	35 mcg EE + 2 mg AC	0.93	1.03	(0.49 - 2.16)
	EE + triphasic LN	0.67	1.14	(0.6 - 2.2)
	30 mcg EE + 75 mcg G	0.12	0.23	(0.01 - 1.72)
Duration of use	< 6 months		1	1
	6 to 12 months	< 0.001	0.21	(0.08 - 0.6)
	> 12 months	0.13	0.53	(0.22 - 1.34)

CI = Confidence interval; OR = Odds ratio; FP = Family planning; SR = Sexual relationships; EE = Ethinylestradiol; DG = Desogestrel; CA = Cyproterone acetate; LN = Levonorgestrel; G = Gestodene.

Table 2. Logistical regression analysis of the modification of sexual desire in female oral hormonal contraceptive (OC) users.

		p	Odds Ratio	CI 95% OR
Age (years)		0.005	1.12	(1.03 - 1.2)
Level of studies	Elementary		1	1
	Intermediate/higher	0.35	1.32	(0.73 - 2.38)
PF information	Nil		1	1
	Basic	0.77	1.14	(0.48 - 2.7)
	Good	0.78	0.88	(0.34 - 2.25)
Partner relationship	Good		1	1
	Average	0.56	1.23	(0.6 - 2.51)
	Poor	0.51	1.62	(0.38 - 6.86)
Age SR initiated	< 18 years		1	1
	18 to 25 years	0.29	1.42	(0.74 - 2.7)
	> 25 years	0.83	1.2	(0.22 - 6.41)
Parity	Yes		1	1
	No	0.1	1.6	(0.92 - 2.79)
Type of OC	30 mcg EE + 150 mcg DG		1	1
	35 mcg EE + 2 mg AC	0.78	0.9	(0.43 - 1.9)
	EE + triphasic LN	0.76	1.1	(0.57 - 2.13)
	30 mcg EE + 75 mcg G	0.2	0.24	(0.27 - 2.11)
Duration of use	< 6 months		1	1
	6 to 12 months	0.04	0.24	(0.09 - 0.64)
	> 12 months	0.11	0.48	(0.2 - 1.2)

CI = Confidence interval; OR = Odds ratio; FP = Family planning; SR = Sexual relationships; EE = Ethinylestradiol; DG = Desogestrel; CA = Cyproterone acetate; LN = Levonorgestrel; G = Gestodene.

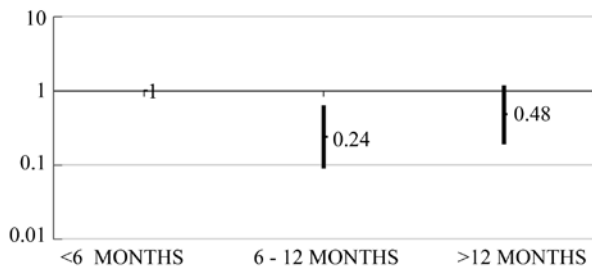


Figure 1. Relative risk of the decrease in sexual desire in relation to the duration of oral hormonal contraceptive (OC) use.

of androgens obtained in these phases accounting for the increase in sexual desire [16]. However, a decrease in sexual desire is produced in OC users during the menstrual and postmenstrual phases [13,17], due to the decrease in the free testosterone plasma levels and other androgens [3].

The action mechanism of hormones with regard to the human sexual response is not totally clear [9,10]. Gladkova [18], Bancroft [3] and other authors [11,19] refer to the relationship between sexual desire and androgens, in that women with a higher level of free testosterone plasma levels present an increased rate of coitus and an increase in sexual arousal and the human sexual response to stimuli [1,20]. Hutchison [20] and van Lunsen and Laan [1] state that the increase in the binding globulin of sexual hormones produces similar responses. Warnock *et al.* [21] and other authors [9,22] refer to the fact that changes in sexuality are due to gestagens and the anti-androgenic effect of estroprogestatives, with estrogens playing a lesser role in the modification of sexual desire in women, although van Goozen *et al.* [15] do not agree with this proposal.

Estroprogestatives are also an influencing factor in sexual behaviour (decrease in interest, desire etc), but are by no means the most important [10]. To this effect Bancroft affirms that psychosocial influences have a greater influence than the reduction of androgens caused by OC treatment with regard to the decrease in sexual desire [3] and that users have a higher rate of sexual activity, greater motivation with regard to sex and are far more positive in evaluating their partner relationship [2]. Sabatini and Cagiano [23] states that OC users that have made an informed choice are aware of the benefits and risks and understand the efficiency of the method, present a better acceptance of this contraceptive method. However, Bastianelli *et al.* [24], in accordance with this study, affirm finding a decrease in sexual desire within the first semester of OC treatment.

Literature on the subject matter calculates the decrease in sexual desire to be at between 5% and 6% of women in studies carried out by Renier [25] and up to 31% in studies by Gómez [26] and Graham *et al.* [22]. Findings

in this study calculate the reduction in sexual desire in women to be at 24%, in agreement with Bastianelli [24]. Other authors, such as Caruso *et al.* [27], place this decrease at 10% of users, whilst authors such as Oddens [28] calculate the decrease to be at 16%.

The use of OC is influenced by a great number of emotional factors, such as the distinction between sexuality and fertility [20,24], which consequently give rise to psychological conflicts regarding pregnancy within a relationship, although Spanish users give the contraceptive pill a positive valuation [23]. Byne *et al.* [29] state that temperament and character within the social and family environment of a person is more important than hormonal influence in sexual desire. Lachowsky [30] affirms that the use of OC methods has modified traditional behavioural models, personal relationships between the sexes and has brought love and sexuality closer together, whilst Bancroft *et al.* [2] suggest that their use has given rise to a diminishing of restrictive sexual morality.

McCoy *et al.* [31] publish that monophasic preparations give rise to a reduction in vaginal lubrication when compared with the results of triphasic treatments, thus producing an increase in sexual desire in triphasic OC users, our study, however, does not coincide with these results.

Creatas *et al.* [11], coinciding with the findings presented in this study, describe an increase in the rate of coital activity in adolescents compared to this activity in older women, thus demonstrating a statistically significant relationship between sexual activity and age.

5. CONCLUSIONS

Sexual desire in female OC users decreases as the age of women increases and increases within the first semester to 12 months of OC treatment.

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