

IMPACT OF HORMONAL CONTRACEPTION ON FEMALE SEXUAL FUNCTION AMONG UNIVERSITY STUDENTS OF REPRODUCTIVE AGE IN THE DOMINICAN REPUBLIC: A CROSS-SECTIONAL STUDY

Impacto de la anticoncepción hormonal en la función sexual femenina entre estudiantes universitarias en edad reproductiva en República Dominicana: un estudio transversal

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Abstract¹

Objective: Identify if hormonal contraception (HC) has a negative impact on female sexual function (FSF) in a group of university students of reproductive age in the Dominican Republic.

Methods: A total of 251 female students between ages 18-30 completed an online survey to evaluate their FSF with the Female Sexual Function Index (FSFI), as well as their relationship with their contraceptive method (CM). Results were analyzed using descriptive statistics and standard non-parametric tests.

Results: The groups in this study were: never used HC (NHC) n=80 (31.9%), uses HC (UHC) n=132 (52.6%), and abandoned HC (AHC) n=39 (15.5%). The mean grade for the FSFI for all groups was 28.84 (2.0-36.0). UHC was the lowest grade (28.15) when compared to NHC (29.84) and AHC (29.23) (p=0.023). UHC had the most participants at risk of female sexual dysfunction (FSD). The highest level of general satisfaction with their CM was in the UHC group (90.2% reported to be satisfied/very satisfied).

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Resumen

Objetivo: correlacionar el uso de anticonceptivos hormonales con la función sexual femenina (FSF) en un grupo de estudiantes universitarias en edad reproductiva de República Dominicana.

Métodos: un total de 251 estudiantes de entre 18 y 30 años completaron una encuesta en línea para evaluar su FSF con la prueba del Índice de Función Sexual Femenina (FSFI), así como su relación con su método anticonceptivo (MAC). Los resultados se analizaron mediante estadística descriptiva y pruebas estándar no paramétricas.

Resultados: los grupos en este estudio fueron: nunca usó AHC (NACH) n=80 (31,9 %), usa AHC (UACH) n=132 (52,6 %) y abandonó ACH (AACH) n=39 (15,5 %). La nota media del IFSF para todos los grupos fue 28,84 (2,0-36,0). UACH fue el grado más bajo (28,15) en comparación con NACH (29,84) y AACH (29,23) (p = 0,023). UACH tuvo la mayor cantidad de participantes en riesgo de disfunción sexual femenina (DSF). El nivel más alto de satisfacción general con su MAC fue en el grupo UACH (90,2 % informó estar satisfecho/muy satisfecho).

Conclusión: existe una correlación débil entre el uso de ACH y el aumento del riesgo de DSF con significación

¹Abbreviations:

HC: Hormonal contraceptive, **FSF:** Female sexual function, **FSFI:** Female Sexual Function Index, **NHC:** Never used hormonal contraceptives, **UHC:** Uses hormonal contraceptives, **AHC:** Abandoned hormonal contraceptives, **FSD:** Female sexual dysfunction



Conclusion: There is a weak correlation between HC use and the increased risk of FSD with statistical significance ($Rho=0.132$; $p=0.037$). FSF levels in UHC were lower than in the NHC group. Despite having the greatest level of satisfaction with their CM, UHC reported the highest level of FSF disturbance. The disturbance of FSF due to HC use was a strong predictor of abandonment (65%).

Keywords: hormonal contraception; sexual dysfunction; sex hormone-binding globulin; sexual health; health survey.

1. Introduction

Hormonal contraceptives (HC) are the most popular method of contraception due to their high efficacy rate¹. In 2019, the United Nations (UN) estimated that 248 million people worldwide use pill, injectable, and implant forms of hormonal contraception². However, changes in sexual health, as well as androgenic insufficiency among HC users, have been reported³⁻⁶. Unlike other side effects of HC, its impact on users' sexual function has not yet been studied as extensively. A better understanding of the relationship between HC use and sexual function is important as the decrease in sexual function is a reported cause of HC discontinuation by users^{4,7}. In the interest of providing women with greater understanding, safety, and control over their reproductive preferences, clinicians must be aware of the impact of these sexual side effects on adherence to the method when giving contraceptive counsel to their patients.

The association between the use of HC and the decrease in sexual function has been attributed to the elevation in the resulting levels of sex hormone-binding globulin (SHBG). Previous studies have discovered an increase in SHBG when using HC and a subsequent decrease in plasma androgens associated with female sexual function (FSF)^{7,8}. A study conducted in Sweden by Malmberg et al. (2016)⁴ found that the use of HC was linked to lower levels of female sexual function, and their users were more likely to discontinue them. Another European study conducted on medical students from various coun-

tries found lower levels of FSF in users of oral HC compared to other methods (including other hormonal methods)^{5,6}. Los niveles de FSF en UACH fueron más bajos que en el grupo NACH. A pesar de tener el mayor nivel de satisfacción con su MAC, UACH reportó el mayor nivel de alteración de FSF. La alteración de la FSF por el uso de ACH fue un fuerte factor de abandono en esta muestra (65 %).

Palabras clave: anticoncepción hormonal; disfunción sexual; globulina de unión a hormona sexual; salud sexual; encuesta de salud.

tries found lower levels of FSF in users of oral HC compared to other methods (including other hormonal methods)^{5,6}.

The Dominican Republic (DR) has one of the highest rates of undesired pregnancy in Latin America and the Caribbean⁹, yet, to the authors' knowledge, the sexual side effects of HC have not yet been widely studied in this population. For this reason, the present study aims to determine whether HC has a negative impact on female sexual function (FSF) among university students, as well as identify the primary reasons for HC abandonment and levels of satisfaction from users.

1.1 Evaluation of Female Sexual Function

FSF is evaluated in six aspects: desire, arousal, lubrication, satisfaction, orgasm, and pain. In the scientific community, FSF has been studied using the Female Sexual Function Index (FSFI)^{5,8}, a validated score-based questionnaire that helps determine the risk of female sexual dysfunction (FSD).

2. Material and Methods

2.1 Study design, study population and ethics

A cross-sectional study was conducted, using a descriptive, questionnaire-based design. The study used snowball sampling to recruit a sample of 18- to 30-year-old female students enrolled at the Universidad Iberoamericana (UNIBE), a private institution

of higher education located in Santo Domingo, Dominican Republic. A total sample of 251 participants was collected, meeting the following criteria: (1) being sexually active and (2) using a hormonal contraceptive method (CM) exclusively for contraception purposes. The exclusion criteria were the following: current pregnancy, use of psychoactive/anticonvulsive medication, chronic disease, current gynecological condition, and use of HC for non-contraceptive purposes. Participants were divided into three groups based on their relationship with HC: one comparison group made up of 80 participants (31.9%) who had never used HC (NHC), one study group composed of 132 (52.6%) current users of HC (UHC), and one study group composed of 39 (15.5%) participants who had abandoned HC (AHC). A 5.9% error margin and 95% confidence level were chosen.

The study took place after prior authorization from the Universidad Iberoamericana's ethics committee (CEI2020-225), and consent was given by all participants through an online questionnaire. Study participation was advertised through medical student interest groups via a standardized email from the university's institutional email service, including the study description and a questionnaire link. The anonymity of participants was maintained at all times. The questionnaire was distributed monthly and was made available for a period of seven months, from September 2020 to April 2021. No financial compensation or other incentives were given to the participants.

2.2 Online questionnaire

The study used an anonymous, self-administered online questionnaire for data collection which was designed using the CHERRIES internet survey checklist¹⁰. The questionnaire was divided into two parts. The first was composed of 21 general questions and 2-7 group-specific questions that were validated through a pilot test. The questionnaire included demographics, satisfaction with CM, fitness level, use of alcohol or tobacco, being in a steady relationship, sexual activity, and other general questions about their relationship with their

CM. The second part incorporated 19 questions of the official Spanish version of the FSFI¹¹, obtained and approved through *ePROVIDE Mapi Research Trust*, based on the sexual experience of participants during the last four weeks.

2.3 Data analysis

All data was processed using IBM SPSS Statistics 28 (Armonk, NY). Demographic and satisfaction data, as well as other data from the first part of the questionnaire, were summarized as either mean and standard deviation (SD), or number and percentage. The FSFI scores were calculated and reported as means for the domain and total scores. The *Kruskal-Wallis test* was used to determine the difference between the total FSFI scores of the study groups, while *Mann-Whitney U* was used to determine the difference in the scores of NHC and AHC groups. *Spearman's correlation* was used to evaluate the difference between the percentages of participants at risk of sexual dysfunction, indicated by a FSFI total score <26.55¹².

3. Results

3.1 Study population, demographics and types of contraceptives

A total of 707 responses were received out of 2,270 online questionnaires that were distributed. Of these, 360 responses were eliminated by the exclusion criteria, while an additional 93 responses were eliminated due to inconsistency patterns, resulting in a total sample of 251 participants, representing 11.1% of the total female student body population. Table 1 summarizes the demographic findings of each study group. The total sample was similar in age, nationality, body mass index (BMI) and religion. A total of 86.5% of the study sample was in a stable relationship. The UHC group was the most sexually active. Table 2 summarizes the types of CM used by each study group. The most common forms of contraception were oral contraceptive pills (OCP) and male condoms. Overall, 52.6% of the total study population used HC.

Impact of hormonal contraception on female sexual function among university students of reproductive age in the Dominican Republic: A cross-sectional study

Table 1. Demographics

	UHC n=132	AHC n=39	NHC n=80	Total n=251
	Mean (SD) ó n (%)	Mean (SD) ó n (%)	Mean (SD) ó n (%)	Mean (SD) ó n (%)
Age (years)	21 (2.4)	22 (2.3)	21 (3.0)	21 (2.6)
BMI	23 (5.1)	23.3 (5.0)	22.5 (3.5)	22.9 (4.6)
Religion				
Catholic	77 (58.3%)	18 (46.15%)	55 (68.75%)	150 (59.8 %)
Evangelical	7 (5.30 %)	5 (12.82 %)	5 (6.25%)	17 (6.8 %)
Other/unaffiliated	2 (1.51 %)	2 (5.12 %)	3 (3.75%)	7 (2.8 %)
None	27 (20.45%)	10 (25.64%)	10 (12.5 %)	47 (18.6 %)
Prefer not to say	19 (14.39 %)	4 (10.25%)	7 (8.75 %)	30 (12.0 %)
Nationality				
Dominican	95 (71.96%)	33 (84.61 %)	63 (78.75%)	191 (76.1 %)
Venezuelan	7 (5.30 %)	0 (0 %)	2 (2.5%)	9 (3.6 %)
Puerto Rican	6 (4.54 %)	1 (2.56%)	9 (11.25%)	16 (6.4 %)
US	13 (9.84 %)	4 (10.25%)	3 (3.75%)	20 (7.9 %)
Other	11 (8.33%)	1 (6.7 %)	3 (3.75 %)	15 (6.0 %)
Physical Activity				
Yes	81 (61.36 %)	25 (64.10%)	53 (66.25%)	159 (63.3 %)
No	51 (38.63%)	14 (35.89 %)	27 (33.75%)	92 (36.7 %)
Smoking				
Weekly	15 (11.4%)	2 (5.1%)	9 (11.3%)	26 (10.3 %)
Monthly	9 (6.8 %)	5 (12.8%)	4 (5%)	18 (7.2 %)
Annual	16 (12.1 %)	9 (23.1 %)	3 (3.8%)	28 (11.2 %)
Never	92 (69.7 %)	23 (59%)	64 (80%)	179 (71.3 %)
Alcohol				
Weekly	43 (32.6 %)	7 (17.9 %)	14 (17.5 %)	64 (25.5 %)
Monthly	49 (37.1 %)	23 (59%)	34 (42.5%)	106 (42.2 %)
Annual	26 (19.7%)	8 (20.5%)	23 (28.8%)	57 (22.7 %)
Never	14 (10.6%)	1 (2.6%)	9 (11.3%)	24 (9.6 %)
Steady relationship				
Yes	120 (90.90 %)	32 (82.05%)	65 (81.3 %)	217 (86.5 %)
No	12 (9.09%)	7 (17.94 %)	15 (18.8%)	34 (13.5 %)
Previous pregnancy				
Yes	6 (4.54 %)	1 (2.56%)	7 (8.75%)	14 (5.6 %)
No	126 (95.45 %)	37 (94.87 %)	74 (92.5%)	237 (94.4 %)
Frequency of intercourse*				
1-5 times/mo	87 (65.9 %)	28 (71.8%)	58 (72.5 %)	173 (69.0 %)
>5 times/mo	45 (34.1%)	11 (28.2%)	17 (21.3%)	73 (29.1 %)
None	0 (0 %)	0 (0 %)	5 (6.3%)	5 (1.9 %)

HC hormonal contraception, *UHC* uses hormonal contraception, *AHC* abandoned hormonal contraception, *NHC* never used hormonal contraception, *BMI* body mass index

Source: Retrieved from data collection.

Table 2. Type of contraceptive method by study group

	n (%)
UHC (n = 132)	
Combine oral contraceptive pill	103 (78.0)
Injection	11 (8.3)
Mini pill	5 (3.8)
Hormonal intrauterine device (IUD)	4 (3.0)
Implant	3 (2.3)
Intravaginal ring	3 (2.3)
Combined hormonal methods	2 (1.5)
Other hormonal methods	1 (0.8)
AHC (n = 39)	
Masculine condom	21 (53.8)
Natural family planning (NFP)	8 (20.5)
Male condom + IUD (non-hormonal)	4 (10.3)
Male condom + NFP	2 (5.1)
Non-hormonal intrauterine device (IUD)	2 (5.1)
Other hormonal method	2 (5.1)
NHC (n = 80)	
Male condom	43 (53.8)
Male condom + NFP	10 (12.5)
Natural family planning (NFP)	7 (8.8)
Non hormonal intrauterine device (IUD)	7 (8.8)
Combined non-hormonal methods	6 (7.5)
Other non-hormonal method	4 (5.0)
No use of CM	3 (3.8)

HC hormonal contraception, *UHC* uses hormonal contraception, *AHC* abandoned hormonal contraception, *NHC* never used hormonal contraception, *CM* contraceptive method

Source: Retrieved from data collection.

3.2 Sexual function

Table 3 shows the total FSFI scores obtained (in a range of 2.0–36.0). The mean (SD) of the overall sample score was 28.84 (4.24). The lowest mean score was reported in the UHC group (28.15) which was 1.69 points under the NHC group and 1.08 points under AHC. The *Kruskal-Wallis* tests revealed a statistically significant difference between these scores ($p = 0.023$). The *U Mann-Whitney* test was used to determine the difference between the scores of the two non-HC groups (AHC and NHC), where there was a statistically significant difference between the FSFI scores of those who have never used HC and those who did in the past ($p = 0.008$). Looking at the mean sub-scores of the FSFI in Table 4, it is noted that the UHC group obtained the lowest scores in arousal, lubrication, and orgasm. For the overall study sample, the lowest subgroup mean score was desire, and the highest was satisfaction.

Table 3. FSFI total scores reported by group

	Mean (SD)	n
UHC	28.15 (4.34)	132
AHC	29.23 (4.74)	39
NHC	29.84 (4.59)	80
Total	28.84 (4.24)	251

FSFI Female Sexual Function Index, *SD* standard deviation, *UHC* uses hormonal contraception, *AHC* abandoned hormonal contraception, *NHC* never used hormonal contraception

Source: Retrieved from data collection.

Table 4. FSFI domain scores by group

	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain
	Mean (SD)					
UHC	4.3 (1.6)	4.9 (1.0)	4.9 (1.0)	4.3 (1.3)	5.1 (1.0)	4.8 (1.2)
AHC	4.8 (1.0)	5.2 (0.9)	5.1 (1.1)	4.5 (1.5)	5.1 (1.1)	4.6 (1.4)
NHC	4.2 (1.0)	5.2 (0.8)	5.4 (0.9)	4.5 (1.4)	5.5 (1.0)	5.0 (1.1)
Total	4.3 (1.1)	5.0 (0.9)	5.1 (1.0)	4.4 (1.4)	5.2 (1.0)	4.8 (1.2)

FSFI Female Sexual Function Index, *SD* standard deviation, *UHC* uses hormonal contraception, *AHC* abandoned hormonal contraception, *NHC* never used hormonal contraception

Source: Retrieved from data collection.

3.3 Female sexual dysfunction (FSD)

The FSFI indicates that any score equal to or under 26.55 suggests a risk of FSD, which is greater with a lower score¹¹. The percentage of participants at risk of FSD in the NHC group was 17.5%, see Table 5. In contrast, the AHC and UHC groups presented a

10.7% and 13.5% increase in their population at risk of FSD, respectively, in comparison to those who had never used HC (NHC). *Spearman's correlation* showed a weak, albeit statistically significant correlation between these differences ($\rho = 0.132$; $p = 0.037$). Overall, 26.3% of the studied population presented a risk of FSD.

Table 5. Risk of female sexual dysfunction between groups

	UHC n=132	AHC n=39	NHC n=80	Total n=251
Risk of FSD*	n (%)	n (%)	n (%)	n (%)
No	91 (68.9)	28 (71.8)	66 (82.5)	185 (73.7)
Yes	41 (31.1)	11 (28.2)	14 (17.5)	66 (26.3)

FSD female sexual dysfunction, *UHC* uses hormonal contraception, *AHC* abandoned hormonal contraception, *NHC* never used hormonal contraception

FSD risk ≤ 26.55 in the FSFI according to Rosen et al.

Source: Retrieved from data collection.

The study found that 43.0% of the population who abandoned HC (AHC) stated a negative impact on their FSF as the cause, almost half of which stated a specific impact on their sexual desire. Other causes of abandonment of HC were decreased lubrication and difficulty reaching orgasm. When asked if they felt their CM affected their FSF, 5% of the NHC group answered "YES, for worse". This was about three and four-fold higher in the UHC and AHC groups, respectively ($\chi^2 = 0.018$).

3.4 Satisfaction with CM

This item was evaluated in five aspects: *overall*, *security*, *ease of use*, *accessibility*, and *cost*; see Table 7. Current users of HC (UHC) reported the highest percentages of satisfaction in the categories of *security*, *accessibility*, and *overall*. In addition, a high level of satisfaction was reported throughout all groups for *ease of use*. Finally, the NHC group reported the highest satisfaction cost-wise.

Table 6. Satisfaction with Contraceptive Method

	Uses HC	Abandoned HC	Never HC	Total
	n (%)	n (%)	n (%)	n (%)
Overall				
Very unsatisfied	2 (1.5 %)	1 (2.6 %)	2 (2.5 %)	5 (2.0 %)
Unsatisfied	6 (4.5 %)	3 (7.7 %)	6 (7.5 %)	15 (6.0 %)
Indifferent	5 (3.8 %)	12 (30.8 %)	9 (11.3 %)	26 (10.4 %)
Satisfied	52 (39.4 %)	8 (20.5 %)	34 (12.5 %)	94 (37.5 %)
Very satisfied	67 (50.8 %)	15 (38.5 %)	29 (36.3 %)	111 (44.2 %)
Total	132 (100 %)	39 (100 %)	80 (100 %)	251 (100 %)
Ease of use				
Very unsatisfied	3 (2.3 %)	0 (0.0 %)	2 (2.5 %)	5 (2.0 %)
Unsatisfied	5 (3.8 %)	3 (7.7 %)	1 (1.3 %)	9 (3.6 %)
Indifferent	9 (6.8 %)	5 (12.8 %)	4 (5.0 %)	18 (7.2 %)
Satisfied	35 (26.5 %)	9 (23.1 %)	25 (31.3 %)	69 (27.5 %)
Very satisfied	80 (60.6%)	22 (56.4 %)	48 (60.0 %)	150 (59.8%)
Total	132 (100 %)	39 (100 %)	80 (100 %)	251 (100 %)
Cost				
Very unsatisfied	2 (1.5 %)	4 (10.3 %)	2 (2.5 %)	8 (3.2 %)
Unsatisfied	10 (7.6 %)	0 (0.0 %)	1 (1.3 %)	11 (4.4 %)
Indifferent	26 (19.7%)	7 (17.7 %)	9 (11.3 %)	42 (16.7 %)
Satisfied	40 (30.3 %)	9 (23.1 %)	24 (30.0 %)	73 (29.1 %)
Very satisfied	54 (40.9 %)	19 (48.7 %)	44 (55.0 %)	117 (46.6 %)
Total	132 (100 %)	39 (100 %)	80 (100 %)	251 (100 %)
Security				
Very unsatisfied	2 (1.5 %)	0 (0.0 %)	1 (1.3 %)	3 (1.2 %)
Unsatisfied	0 (0.0 %)	5 (12.8 %)	8 (10.0 %)	13 (5.2 %)
Indifferent	7 (5.3 %)	6 (15.4 %)	4 (5.0 %)	17 (6.8 %)
Satisfied	22 (16.7 %)	12 (30.8 %)	37 (46.3 %)	71 (28.3 %)
Very satisfied	101 (76.5 %)	16 (41.0 %)	30 (37.5 %)	147 (58.6 %)
Total	132 (100 %)	39 (100 %)	80 (100 %)	251 (100 %)
Accessibility				
Very unsatisfied	2 (1.5 %)	1 (2.6 %)	2 (2.5 %)	5 (2.0 %)
Unsatisfied	0 (0.0 %)	0 (0.0 %)	1 (1.3 %)	1 (0.4 %)
Indifferent	2 (1.5 %)	5 (12.8 %)	5 (6.3 %)	12 (4.8 %)
Satisfied	32 (24.2 %)	10 (25.6 %)	18 (22.5 %)	60 (23.9 %)
Very satisfied	96 (72.7 %)	23 (59.0 %)	54 (67.5 %)	173 (68.9 %)
Total	132 (100 %)	39 (100 %)	80 (100 %)	251 (100 %)

CM contraceptive method; *HC* hormonal contraception

Source: Retrieved from data collection.

3.5 Adherence to contraceptive method

When asked about the probability of abandoning their CM if it were to negatively affect their FSF, 65% of the entire population responded “likely” and “very likely”. As mentioned earlier, this was the main reason for abandonment in the AHC group.

Table 7. Likelihood of CM abandonment*

	n (%)
Very likely	89 (35.5)
Likely	74 (29.5)
Indifferent	34 (13.5)
Unlikely	33 (13.1)
Very unlikely	21 (8.4)
Total	251 (100)

CM contraceptive method, *SF* sexual function
*due to negative effects on SF

Source: Retrieved from data collection.

4. Discussion

Evaluating the data obtained from this study and putting them into the context of previous findings on the matter^{4, 6, 13}, similar results were found in the present study population. As hypothesized, the use of HC resulted in a lower FSFI score, and higher FSD risk in those currently using HC than in those who did not use HC, which suggests a direct relationship. The full knowledge of possible side effects from the use of HC should be available to patients in counseling to create an individualized and informed choice of CM that can better support sexual well-being and adherence to the method.

With the goal of evaluating the possible effects of HC on the FSF after its discontinuation, FSFI scores were compared between the NHC and AHC groups.

These groups represent the non-current users of HC, in which the difference between them was the history of HC use. Results were also congruent with previous studies^{1, 4, 5, 8, 13}: there was a statistically significant lower score in the AHC group. These findings suggest that the use of HC negatively impacts FSF and that there is a long-term effect of HC use on the FSF even after its discontinuation.

The study found a strong perception of decreased sexual function for the groups related to HC (UHC, AHC) in comparison to those who had not used HC (NHC), which was consistent with what Malmberg et al. had found in a similar study⁴. Results also showcased that despite a lower FSFI score and higher RFSF, users of hormonal contraceptives had high levels of satisfaction with their contraceptive method, particularly regarding the aspect of safety. This could suggest that for this specific population, given factors such as age, socioeconomic and educational background, contraceptive safety renders more importance than sexual well-being. With the aim of continuing to improve the sexual health and well-being of HC users, it is relevant to continue investigating the options of available contraceptives for women of reproductive age and their impact on female sexual health.

The results of this investigation on the effect of HC on FSF, the perception of its users and their willingness to abandon the method if their FSF is affected by it, demonstrate the clinical importance of being aware of the sexual side effects of the use of HC and the poor compliance it could render when counseling patients on birth control. This is particularly important in the Dominican Republic, where unwanted pregnancy rates are among the highest in Latin America and the Caribbean⁹, notably among students. Every year, 74 million women of low- and middle-income countries experience unplanned pregnancies, often resulting in increased economic burdens and the deterioration of their economic standing, lower rates of educational attainment, lower employment capacity, 25 million

annual unsafe abortions, and 47 million annual maternal deaths^{14, 15}.

It is important to note the study limitations. First, with limited financial resources, the study was unable to measure levels of testosterone and sex hormone-binding globulin (SHBG) between the study groups to further understand the differences in FSF interactions with HC. Second, given that the Dominican Republic is a highly socioeconomically heterogeneous society, these results cannot be generalized to the entire country's population since this study included a narrow study population (students at a private university in the capital city) for which further studies will be necessary. Third, given that the study explored the effects of HC as a whole on the sexual function of its users, there was no distinction made between the type of contraceptives, compositions, dosages or route of administration. Any internal differences these could have on the effect of HC on sexual function was outside the scope of this study. Finally, given that data collection began during national lockdown due to COVID-19, the study allowed answers from participants' most recent experiences, instead of the 4-week margin that the FSFI test is designed for, which may have resulted in recall bias.

In conclusion, this study shows an association between HC use and the increased risk of FSD in the context of female students of the Universidad Iberoamericana (UNIBE) between 18 and 30 years of age. In terms of the measurement of FSF impact by HC (tables 3 and 5), the findings in the AHC group, despite being lower than in the group of users (UHC), were consistently higher than in the NHC group, suggesting a possible long-term effect of HC use after its abandonment. Moreover, we found that negative HC impact on FSF was both a strong predictor and cause of abandonment of the contraceptive method in this population.

However, since the multifactorial etiology of female sexual dysfunction is more complex than this study can encompass, we cannot affirm a direct and causal

relationship between the use of hormonal contraceptives and female sexual dysfunction. We can only confirm that in our study population, users of HC presented lower levels of FSF. More data is needed worldwide to continue to study this relationship.

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