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ORIGINAL RESEARCH

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PREVALENCE AND CHARACTERISATION OF SEXUAL DYSFUNCTIONS IN WOMEN, IN 12 COLOMBIAN CITIES, 2009-2016

Prevalencia y caracterización de las disfunciones sexuales en mujeres, en 12 ciudades colombianas, 2009-2016

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ABSTRACT

Objective: To determine the prevalence and characterisation of sexual dysfunctions in a population of sexually active women with ages ranging between 18 and 72 years, in 12 Colombian cities.

Materials and methods: Descriptive cross-sectional study that included women 18 years of age and older, sexually active within the past six weeks, living in Colombia. Excluded were illiterate and pregnant women, women in the first 6 months postpartum, women with a psychiatric disease or neurological deficit, and women with a history of cancer. The study was conducted in healthcare centres in twelve cities (Bogotá, Medellín, Cali, Barranquilla, Cartagena, Cúcuta, Ibagué, Bucaramanga, Villavicencio, Pereira, Manizales and Armenia) between June 2009 and December 2016. A consecutive sampling method was used. The "Female Sexual Function Index" validated in Spanish was applied. Sociodemographic variables, a history of sexual and reproductive health, sexual behaviour, and frequency of overall sexual dysfunction and by type of dysfunction assessed were measured. A descriptive analysis of the data was performed using absolute and relative measurements. A stratified description was made by age under or over 40 years.

Results: Of a total of 72,894 candidates for enrolment, 50,991 (69,95%) were ultimate analysed. Mean age was 30.9±10.8 years. The prevalence of sexual dysfunction in the study group was 32.97% (16,812 women). The score on the FSFI in the affected women was 24.07±6.18 points. Issues were found with libido in 32.97%, orgasm in 21.93%, arousal in 16,86%, lubrication in 14,79%, and pain in 7.56%. Median sexual dysfunction per woman was 2, found in 64.16%.

Conclusion: Among Colombian women, a prevalence of sexual dysfunction is found in close to one-third of the population, characterised mainly by issues with libido and orgasm. Interventions are required in order to establish an immediate diagnostic and therapeutic plan.

Key words: Physiological Sexual Dysfunctions; Dyspareunia; Women; Orgasm; Prevalence

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RESUMEN

Objetivo: establecer la prevalencia y caracterización de las disfunciones sexuales en una población de mujeres sexualmente activas, con edades entre 18 y 72 años, en doce ciudades colombianas.

Materiales y métodos: estudio de corte transversal descriptivo. Se incluyeron mujeres mayores de 18 años con actividad sexual en las últimas 6 semanas, y residentes en Colombia. Se excluyeron las mujeres analfabetas, embarazadas o en primeros 6 meses posparto, las enfermas psiquiátricas o con déficit neurológico e historial de cáncer. El estudio se llevó a cabo en centros de atención de doce ciudades del país (Bogotá, Medellín, Cali, Barranquilla, Cartagena, Cúcuta, Ibagué, Bucaramanga, Villavicencio, Pereira, Manizales y Armenia) entre junio de 2009 y diciembre de 2016. Se realizó muestreo consecutivo. Se aplicó el Índice de Función Sexual Femenina validado en español. Se midieron variables sociodemográficas, antecedentes de salud sexual y reproductiva, comportamiento sexual, frecuencia de disfunción sexual global y por tipo de disfunción evaluada. Se realizó un análisis descriptivo de la información utilizando medidas de frecuencia absoluta y relativa para los datos. Se hace descripción estratificada por edad (40 años o menos y mayor de 40 años).

Resultados: de un total de 72.894 mujeres candidatas a ingresar se analizaron finalmente 50.991 (69,95 %). La edad promedio fue de 30,9 ± 10,8 años. La prevalencia de disfunción sexual en el grupo estudiado fue del 32,97 % (16.812 mujeres). La puntuación del Índice de Función Sexual Femenina (IFSF) en las mujeres afectadas fue de 24,07 ± 6,18 puntos. Se presentaron dificultades con el deseo (32,97 %), el orgasmo (21,93 %), la excitación (16,86 %), la lubricación (14,79 %) y dolor (7,56 %). La mediana de disfunciones sexuales por mujer fue de 2, que se hizo presente en el 64,16 %.

Conclusión: en las mujeres colombianas existe una prevalencia de disfunciones sexuales cercana a la tercera parte de la población, caracterizadas principalmente por trastornos del deseo y del orgasmo. Se requieren intervenciones para establecer un plan diagnóstico y terapéutico inmediato.

Palabras clave: disfunciones sexuales fisiológicas, dispareunia, mujeres, orgasmo, prevalencia.

INTRODUCTION

Sexual health has been defined as "the experience of a continuous process of physical, psychological and sociocultural wellbeing, respecting, recognising and securing the right to sexual pleasure, emotional sexual expression, information based on scientific knowledge, comprehensive sexual education and sexual healthcare" (1). A sexual dysfunction is defined as an impairment during any stage of normal sexual activity experience by an individual or a couple during at least 6 months (2), and which could have a negative effect on sexuality and quality of life.

Sexual dysfunctions cover four areas of sexual challenges or disorders: orgasm, libido, arousal and pain (3). In the woman, sexual problems are associated with marital difficulties, anxiety and depression (4), which have negative repercussions on quality of life, considering that sexual activity is important for the general health and wellbeing of the individual (5) as well as for marital harmony.

In the world literature, the prevalence of sexual dysfunction has a wide variation. A figure ranging between 28% (6) and 53% (7) has been reported in Europe. A variable prevalence between 46% (8) and 73% (9) has been described in Asia, while in America a fluctuation between 43% (10) and 65% (11) has been reported. On the other hand, it is estimated that close to 40% of women will experience some form of sexual disorder during their lifetime (12, 13). The frequency of sexual dysfunction varies according to age, the presence of morbid conditions, a history of sexual violence, interpersonal problems, among other things, and it is considered a multifactorial phenomenon. The risk factors shown to have a significant association include low frequency of intercourse, low level of education, unemployment, age over 40 years, poor communication with the couple, marriage

of 10 years or more, menopause, presence of an underlying medical disease, having a partner with sexual dysfunction, and being a housewife (14-17).

Multiple questionnaires have been developed for the study and assessment of sexual function in women, including the Brief Index of Sexual Function for Women (BISF-W) (18), the Sexual Function Questionnaire (SFQ) (19), and the Female Sexual Function Index (FSFI) (20). The latter has been the most widely used in research worldwide and has been translated into Spanish and validated in different countries, including Colombia (20-22). The main value of this index is its specific design for assessing female sexual health and detecting sexual dysfunctions in women. The FSFI is used not only because of its high reliability, but also because of its psychometric properties and its excellent performance (internal consistency, test-retest reliability and discriminating validity). Added to this, it may be self-administered, brief, fast, simple and reliable when used over a wide age range, and complies with the classification of the International Consensus Development Conference on Female Sexual Dysfunctions (14, 20, 22, 23). For all these reasons, it has become the favourite tool for assessing female sexual function. There are limitations to the valid and accurate determination of female sexual dysfunctions because of the use of various definitions of what is "normal" or "abnormal" sexual function, and due to the selection of samples with a different population base (16, 17, 22, 24). In Colombia, publications on the prevalence of sexual dysfunction in women have limitations in terms of coverage and the type of population included (22, 23); for this reason, the objective of this study is to estimate the prevalence of sexual dysfunction and characterise the affected domain (libido, arousal, lubrication, orgasm, satisfaction and coital pain) in a broad sample of Colombian women.

MATERIALS AND METHODS

Design and population. Descriptive cross-sectional study that included women 18 years of age and older who reported having had sexual activity over the past six weeks and who signed the informed consent to participate in the study. Excluded were pregnant women or women in the first 6 months postpartum, with a low level of schooling, psychiatric diseases or neurologic deficit, mental retardation or with a history of cancer. The women were seen in gynaecology outpatient clinics of 12 high-complexity private institutions during the time period between June 01, 2009, and December 31, 2016. These institutions receive patients affiliated to both the contributive and as well as the subsidised health insurance regimes. Institutions were selected in the cities of Bogotá, Medellín, Cali, Barranquilla, Cartagena, Cúcuta, Ibagué, Bucaramanga, Villavicencio, Pereira, Manizales and Armenia. Consecutive convenience sampling was used with the intent to include the entire sample of women who responded the survey.

Procedure. The women who attended the gynaecology outpatient clinics in the participating institutions were assessed by a registered nurse in order to determine if they met the eligibility criteria of the study. If the criteria were met, the woman was informed about the objectives of the research and the purpose of the results, was assured of the confidentiality of the information, and was asked to sign the informed consent. Once the consent was obtained, the licensed practical nurses in charge of collecting the standardised tool instructed each of the women to complete the FSFI questionnaire on their own, in a private setting.

The Females Sexual Function Index (FSFI) is a tool comprising 19 questions designed to assess 6 domains: libido (items 1 and 2), arousal (items 3 to 6), lubrication (items 7 to 10), orgasm (items 11 to 13), satisfaction (items 14 to 16) and pain during intercourse (items 17 to 19). Response is measured according to the following scores: 0) No sexual activity; 1) Hardly never; 2) Less than half of the time; 3) Half of the time; 4) More than half of the time; 5) Almost always. The score for each domain is multiplied by a factor between 0.3 and

0.6, depending of the domain assessed; at the end, the result is the arithmetic sum of the domains and, the higher the score, the better sexuality is. The FSFI total score ranges from 2 to 36 (Annex 1); a score of 26.55 points or less, or a score of less than 3.6 points for one domain is considered a risk criterion for sexual dysfunction (12, 13, 16, 22).

The research team was formed by the principal investigator who led the teams in each city. In each of the institutions, the teams consisted of three trained practical nurses under the coordination of a registered nurse trained in clinical sexology; they were all experts in the completion of the FSFI and fully conversant with the aims of the research.

Variables measured. Sociodemographic (age, race, schooling, socioeconomic bracket, marital status, affiliation to the general social security system in health, relationship with a partner, spiritual or religious condition, area of residence); sexual and reproductive health variables (parity, age at menopause, smoking, alcohol intake, use of hormonal contraception, personal and family history of depression or sexual dysfunction, use of hormonal replacement therapy); sexual behaviour variables (sexual preference, age of first intercourse, masturbation, coitus -vaginal or anal- average frequency of intercourse per week, frequency of orgasm, number of sexual partners, time living with the partner, history of sexual abuse or sexual violence in the marriage, partner with sexual dysfunction, and infidelity). The questions of the domains in the FSFI survey were also asked; additionally, analysis by age subgroups was considered (younger and older than 40 years) in order to make a final comparison of the behaviour of the prevalence of sexual dysfunctions in the women in these two periods in percentage terms.

Statistical analysis. The statistical calculations were done using the EPIDAT 3.1 software package. Qualitative variables were expressed as absolute and relative frequencies (percentages), and quantitative variables were expressed as means and standard deviations (SD). The results are grouped for the total population. The prevalence of sexual dysfunction is presented in global terms and by domains.

Ethical considerations. The research was approved by the Health Service Scientific Ethics Committee in each institution; informed consents were signed before enrolment in the study; and confidentiality of the information of the women who agreed to participate was guaranteed.

RESULTS

A total of 72,894 women were invited to take part in the study and, of them, 3,801 (5.21%) refused to participate. The remaining 69,093 women were asked to complete the FSFI, but a total of 12,084 (16.57%) withdrew voluntarily because they felt uncomfortable giving answers regarding certain variables related to their sexual health. This left 57,009 surveys, of which 6,018 (8.25%) were found to be incomplete questionnaires, and were excluded. Consequently, a total of 50,991 (69.95%) questionnaires were considered for the analysis (Figure 1).

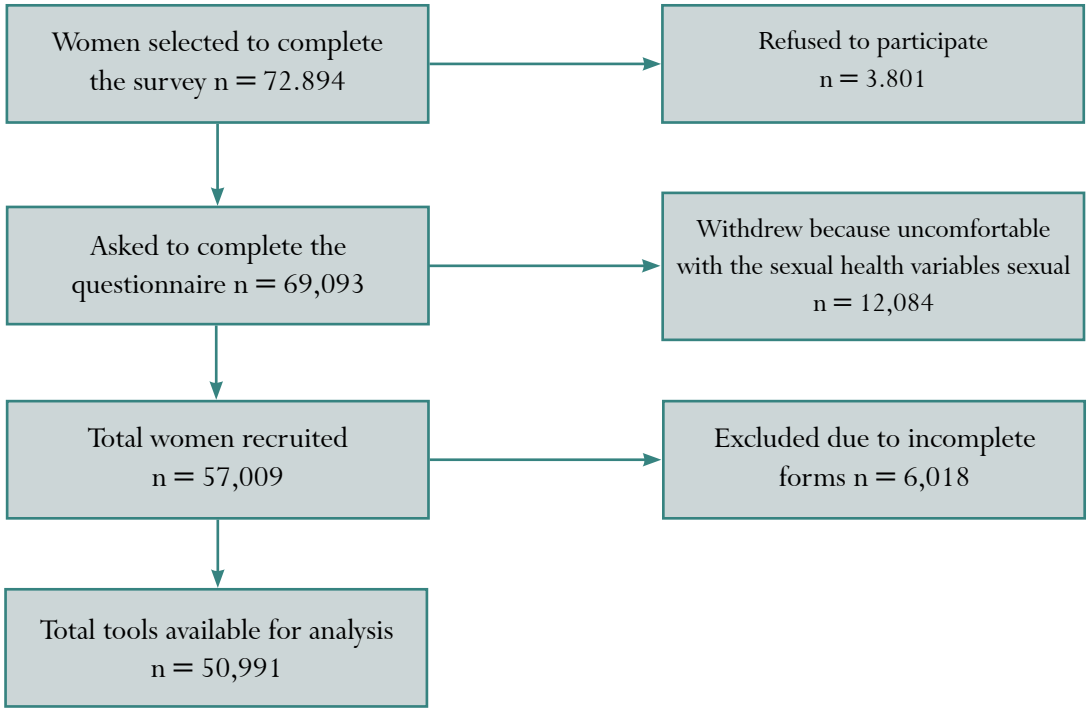
Regarding the sociodemographic characteristics of the population of women surveyed, mean age was 30.9 (SD ± 10.8) years; the majority were of mestizo race (59.3%); 76.94% were married or in a free union; 60.3% were catholic; 54.04% had secondary education; and 35.09% had a university degree. Regarding socioeconomic bracket, 16.14% belonged to the high bracket. Additionally, 52.63% were housewives, 72.28% were in the contributive regime of the social security system in health, and 79.17% lived in urban areas. Age at menopause was 49.8 ± 3.6 years. The multiparous/nulliparous ratio was 3:1.

In terms of sexual and reproductive health, median parity was 3 children (2 vaginal deliveries and 1 cesarean section per woman) with a range of 0 to 9 children. A total of 40,727 (79.87%) women reported having had more than one pregnancy and, of these, 32,517 (79.84%) were unplanned pregnancies. Of the women, 12.6% were smokers, while 14.7% reported having smoked in the past;

and 66.3% consumed alcohol. A high proportion of the women used contraceptive methods (89.83%) with a predominance of hormonal contraception (58.99%): oral contraceptives (78.75%), followed by subdermal implants (17.98%) and, finally percutaneous injections (3.25%), whereas the use of hormonal replacement therapy was found only in 5.99% of the women over 40 years of age. On the other hand, 3,564 women (6.98%) reported that the pregnancy had been the result of intercourse under the influence of alcohol and no preservative use. The overall prevalence of abortions was 17.21% and, in 3.456 women (7.26%), these abortions were induced and performed in risky conditions (use of self-medicated agents or in clandestine places).

In terms of sexual behaviours, the median number of sexual partners was 12, with a range between 1 and 18; 26.98% reported living with a partner for more than 10 years; 68.17% reported some form of sexual dysfunction in the partner; 34.28% reported infidelity on the part of the partner; 19.3% reported infidelity on their part and, of them, 26.99% reported having been unfaithful once, 52.68% more than once but less than five times, 6.91% more than five times, and 13.4% reported frequent infidelity. Table 1 shows the general characteristics of the patients. Sexual preference is predominantly heterosexual (82.98%). Regarding the initiation of sexual activity, mean age is 16.2 years (SD ± 2.1). The most frequent sexual practice is vaginal coitus and the least frequent is anal coitus (23.61%); masturbation is considered common practice in 77.34% of the surveyed women. To the question of "how many times did you have intercourse last week?" (period defined as the previous seven days), 57.39% of the total surveyed population reported having intercourse three times per week; of them, 40.89% do it once per encounter, 28.56% do it twice, el 20.79% do it 3 times, and 9.18% do it 4 or more times per encounter.

Figure 1.
Flowchart of the study population



Of the women surveyed, 8.56% reported having suffered some form of sexual violence during their lives, while 5.19% reported sexual abuse from their partners.

The overall FSFI score for the total number of 50,991 women was 28.13 points, the highest score being 34.26 and the lowest 7.83, with a standard deviation of ± 6.12 points. The prevalence of sexual dysfunction in the study group was 32.97% (n = 16,812/50,991), with an FSFI score of 24.07 ± 6.18 points. The most frequent sexual dysfunction was impaired libido in 16,812 cases (32.97%), followed by altered orgasm in 11,178 cases (21.93%) and altered arousal in 8,562 cases (16.79%). It was found that 8.68% are affected by one sexual dysfunction, 64.16% by two dysfunctions, and 24.17% by 3 or more sexual dysfunctions, with a median of 2 per woman (range between 1 and 4). Table 2 describes the detailed scoring for each FSFI domain in the population of women with sexual dysfunction. Regarding altered orgasm, 19.67% of the women reported never having experienced orgasm in their lives; however a frequency of 58.34% of orgasm simulators was found versus 31.14% who "never" fake it, while 10.52% reported not knowing what orgasm is. To the question about the frequency of reaching orgasm, 47.19% replied that that they reached orgasm "frequently", 24.58% reported they "always" did, and 6.98% reported being multi-orgasmic. A total of 4.89% of the women reported having attended a sexology consultation or sexual counselling; of them, 2.85% stated having received treatment for the sexual disorder at least once.

The analysis of the population of women with sexual dysfunction by age under and over 40 years shows an overall prevalence of sexual dysfunctions of 21.08% among those younger than 40, and of 79.41% in women older than 40. In women under 40 years of age, the prevalence of altered libido was 23.7%, issues with arousal 14.1%, lubrication failure 11.4%, issues with orgasm 19.8%, problems of sexual satisfaction 87.6%, and coital pain 5.4%, with a median of 2 sexual dysfunctions per woman. In women over 40 years of age, the observed prevalence was 38.4% for libido disorders, issues with arousal 16.2%, lubrication failure 17.7%, issues with orgasm 23.1%, sexual satisfaction 79.2% and coital pain 11.7%, with a median of 3 sexual dysfunctions per woman. Regarding scores by domain, lower values are found among women over 40, both in the domains as well as the final FSFI score (24.15 ± 6.27 *vs*. 23.64 ± 5.49, respectively), as well as in the score for each domain (Table 3).

DISCUSSION

The prevalence of sexual dysfunctions found in the study in Colombian women was 32.97%. The study also found that the most prevalent sexual dysfunction was altered libido (32.97%), followed by altered orgasm (21.93%) and, thirdly, by altered arousal (16.79%). Likewise, the presence of a single sexual dysfunction was unusual (8.69%).

When comparing the prevalence of sexual dysfunction, similar figures were found to those of other studies conducted in Colombia by Espitia in the coffee region with 34.9% (12), and Monterrosa et al. with 38.4% (16). When comparing our results with those of other authors In Latin America who also used the FSFI, our results are found to be lower than the 60.4% reported by Matute et al. in Ecuador (25), 49% reported by Abdo et al. in Brazil (26), 50.6% by Castelo-Branco et al. in Chile (27), and 55.8% by García et al. in Colombia (28). The difference between the results obtained in our research and those of other authors could be attributed to the type of population selected (25, 26), unequal age groups (27), and racial differences (14).

Regarding the FSFI domains, sexual libido was the most commonly reported dysfunction, similar to results reported in other publications in different countries (14, 29-32). The high percentage of anorgasmia in this group of women (21%) is lower than the one published in the Colombian literature (22, 23, 33, 34), except for a study conducted in Bogota by Acuña *et al.* in 2008, which found 3.29% of women with primary anorgasmia (35), while or-

Table 1.
Sociodemographic and sexual and reproductive health characteristics of the women surveyed on sexual function in 12 Colombian cities

Variables	N: 50,991
Age*	30.8 ± 18.9
Age of the partner*	45.6 ± 5.4
Weight*	60.3 ± 10.8
Height*	1.59 ± 0.51
BMI*	23.7 ± 4.2
Race	**n (%)**
Mestizo	30237 (59.29%)
Afro-Colombianas	12237 (%)
Indigenous	8517 (16.7)
Socioeconomic bracket	
High	8235 (16.14%)
Medium	30978(60.75%)
Low	11778 (%)
Marital status	
Married	24795 (48.62%)
Free union	14441 (28.32)
Single	2608 (5.11%)
Divorced	9147 (17.93%)
Occupation	
Housewife	26832 (52.62%)
Employed	16465 (32.29%)
Retired	7694 (15.08%)
Social security affiliation	
Contributive	36861 (72.28%)
Subsidised	14130 (27.71%)
Personal history of depression	7164 (14.04%)
Family history of depression	6138 (12.03%)
History of sexual dysfunction	3708 (7.27%)
Origin	
Urban	40371 (79.17%)
Rural	10620 (20.82%)
Level of Schooling	
Secondary	27558 (54.04%)
Technical	5538 (10.86%)
Professional	17895 (35.09%)
Sexual preference	
Heterosexual	42237 (82.83%)
Homosexual	3057 (5.99%)
Bisexual	5697 (11.17%)

* Mean ± standard deviation

Table 2.
Females sexual function index in Colombian women with sexual dysfunctions

Domains	Mean (± SD)	Sexual dysfunction (%)
Libido	3.42 ± 1.11	32.97
Arousal	4.08 ± 0.87	16.86
Lubrication	4.26 ± 0.93	14.79
Orgasm	3.51 ± 1.26	21.93
Satisfaction	4.41 ± 0.84	82.26
Pain	4.38 ± 1.17	7.56
Total score	24.07 ± 6.18 points	

gasm disorders in the population of women over 40 in this study are higher than those found in other studies (22, 23). In terms of studies published in other countries, our results are similar to those found in Brazil (21%) (26) and the ones reported by Najafabady *et al*., in Iran (26.1%) (36). However, they are much lower than the results reported by Ojomu *et al*. in Nigeria, according to which, 55% of the women had problems with orgasm (37). These authors consider that the high frequency could be associated with poor conjugal communication, absence of foreplay, and muslim religion in that country. This study points to the importance of religious or cultural acts regarding sexual function.

The prevalence of sexual arousal and lubrication disorders is similar in percentage terms to that reported by other authors (13, 38). The finding of coital pain (7.5%) in our study is consistent with international publications from developed countries (15, 39, 40).

High scores in the satisfaction domain were associated with orgasmic consistency as well as with a higher frequency of intercourse. The latter is subject to the influence of multiple aspects of female sexual function, which is consistent with what other studies have documented (12, 13, 41-43).

As far as our findings are concerned, there is a higher prevalence of sexual dysfunctions (79.41%) in women over 40 years of age when compared with women under 40 (21.08%), with a predominance of libido disorders in both groups (38.4 and 23.7%, respectively). Similar prevalences of altered libido have been reported in Colombian women, ranging between 24.7% in women under 40 (22) and 75% in women over 40 (14, 23). On the other hand, it was found that the frequency of sexual activity declined with older age, with activity being more frequent among women under 40 than among women over 40, just as is described in the reviewed literature (12, 44, 45).

In terms of the limitations of this research, the questionnaire used requires a certain level of education for adequate understanding and interpretation of the questions and domains, and it is not considered appropriate for use with an illiterate population or in women with a low level of schooling. Therefore, the fact such population was not included might have given rise to a selection bias, resulting in a bias of a high participation of the women with a high level of schooling described in the study.

Convenience sampling prevents generalisation of the results. Likewise, not having extended the study to the rest of the cities in the country may have resulted in the exclusion of many more women with sexual dysfunctions, introducing a bias in relation to the prevalence among Colombian women. Notwithstanding, given that the sample was representative,

Table 3.
Females Sexual Function Index (FSFI), by age, in 12 Colombian cities, 2009-2016

	Libido	Arousal	Lubrication	Orgasm	Satisfaction	Pain	Total
< 40 years	3.36 ± 0.81	4.32 ± 1.05	4.17 ± 1.17	3.48 ± 1.08	4.71 ± 1.14	4.11 ± 1.02	24.15 ± 6.27
> 40 years	3.15 ± 0.78	4.05 ± 0.75	4.02 ± 0.81	3.39 ± 0.93	4.32 ± 1.05	4.71 ± 1.08	23.64 ± 5.49

information is made available about a significant population group.

Future studies on the prevalence of sexual dysfunctions in Colombian women should be done on the basis of random sampling of the general population, considering that subject selection in the setting of a gynaecological consultation may lead to selection bias. A greater participation of the other cities of the country and the inclusion of the rural population are important.

The strengths of this study include the large sample of a population of women attending gynaecological consultation, resulting in the selection of a wide range of ages, socioeconomic brackets; and the use of the FSFI, a questionnaire with good recognition and proven reliability and internal consistency, recently validated in Colombia (23).

In light of these results, we invite physicians to ask routinely about potential sexual disorders in their patients, considering that, when asked, 50% of women report sexual issues (46). Gynaecologists are in an ideal position in this regard, given that 42% (47) and 98.8% (48) of women discuss their sexual concerns with their gynaecologists during routine checkups. Consequently, these practitioners may broach the subject more easily and help women solve their sexual issues.

CONCLUSION

Approximately one-third of Colombian women experience sexual dysfunctions, characterised mainly by altered libido and orgasm, with negative repercussions for quality of life. Inquiring into aspects of sexuality during gynaecological consultation is important in order to develop an interdisciplinary management plan.

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Annex 1. Female Sexual Function Index					
Domain	**Questions**	**Score**	**Factor**	**Minimum**	**Maximum**
Libido	1-2	1-5	0.6	1.2	6
Arousal	3-6	0-5	0.3	0	6
Lubrication	7-10	0-5	0.3	0	6
Orgasm	11-13	0-5	0.4	0	6
Satisfaction	14-16	0-5	0.4	0.8	6
Pain	17-19	0-5	0.4	0	6
Total Score				**2**	**36**