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ORIGINAL ARTICLE

Genitourinary symptoms and sexual function in women with primary ovarian insufficiency

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ABSTRACT

Objective: There are limited studies on urogenital symptoms in women who experience menopause before the age of 40 years due to primary ovarian insufficiency (POI) or bilateral oophorectomy (surgical POI). This study aimed to compare the urogenital symptoms, including sexuality, of women with POI to those without the condition.

Methods: This cross-sectional study conducted was in seven Latin American countries, in which postmenopausal women (with POI and non-POI) were surveyed with a general questionnaire, the Menopause Rating Scale (MRS) and the six-item Female Sexual Function Index (FSFI-6). The association of premature menopause with more urogenital symptoms and lower sexual function was evaluated with logistic regression analysis.

Results: Women with POI experience more urogenital symptoms (MRS urogenital score: 3.54 ± 3.16 vs. 3.15 ± 2.89, $p < 0.05$) and have lower sexual function (total FSFI-6 score: 13.71 ± 7.55 vs. 14.77 ± 7.57 $p < 0.05$) than women who experience menopause at a normal age range. There were no significant differences in symptoms when comparing women based on the type of POI (idiopathic or surgical). After adjusting for covariates, our logistic regression model determined that POI is associated with more urogenital symptoms (odds ratio [OR]: 1.38, 95% confidence interval [CI] 1.06–1.80) and lower sexual function (OR: 1.67, 95% CI 1.25–2.25).

Conclusion: POI, whether idiopathic or secondary to bilateral oophorectomy, is associated with symptoms that affect vaginal and sexual health.

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Primary ovarian insufficiency; premature menopause; surgical menopause; sexuality; genitourinary symptoms

Introduction

Premature menopause refers to the permanent cessation of menstruation before the age of 40 years [1]. However, some women who experience prolonged periods of amenorrhea before that age can start menstruating again and even become pregnant [2]. For this reason, when a physician encounters a young woman with amenorrhea lasting more than a year, it is preferred to use the term primary ovarian insufficiency (POI). This is because we cannot determine whether she will eventually have menstruation again.

The prevalence of POI may vary and change over time. Coulam et al. reported a prevalence of 1% in a small study of fewer than 2000 women [3]; while a recent meta-analysis showed that the global overall prevalence of POI is 3.5%. This figure also varies by region or economic status. For instance, it is 11.3% at the highest in North America followed by 5.4% in South America; or 5.3% in a developing country compared to 3.1% in a developed one. In any case, over the past 20 years, the prevalence of POI has risen [4].

Premature loss of ovarian function, characterized by amenorrhea, elevated gonadotropins and estrogenic deficiency, is associated with long-term health consequences including not only the loss of fertility but also the severe impairment of quality of life and an increased risk of chronic diseases. In relation to quality of life, studies clearly show that onset of the menopause at a normal age significantly deteriorates it [5]; but few studies adequately evaluate the quality of life in women with POI using specific instruments. A meta-analysis by Li et al., which included six studies with only 645

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participants with POI and 492 normal-ovarian control subjects, concluded that POI was associated with low-to-medium effect size on health-related quality of life compared to controls [6]. Despite this, the authors concluded that the heterogeneity of the studies made interpretation of these results difficult [6]. Regarding the risk of chronic diseases in women with POI, different studies have associated the early loss of ovarian function with an increased risk of fracture, cardiovascular disease, heart failure, diabetes mellitus and overall mortality [7].

One of the most well-known effects of estrogen deficiency is urogenital atrophy, which commonly causes vaginal dryness, irritation and itching as well as urinary symptoms. Since 2014, this condition has been called the genitourinary syndrome of menopause [8]. Both urogenital symptoms and sexual disorders increase postmenopause [9]. These symptoms have widely been studied in women undergoing an age-appropriate menopausal transition, but there are few studies concerning the prevalence and treatment of urogenital symptoms in women with POI [10]. Hence, the present study aimed to describe urogenital symptoms, including sexuality, in women with POI before age 40 years, including idiopathic and surgical POI, in comparison to those without the condition.

Methods

Study design and participants

This cross-sectional, observational and analytic multinational study was carried out between January and October 2023 for general gynecological consultations in seven Latin American countries: Argentina, Brazil, Colombia, Costa Rica, Mexico, Panamá and Perú. Participants were women under 70 years of age who attended a routine health check-up (convenience sampling). Investigators from the participating centers were asked to survey 100 postmenopausal women, with at least one-third having had POI.

Included participants were otherwise healthy postmenopausal women, ruling out those who had received chemotherapy or radiotherapy that could have altered their ovarian function. All women could read and write in Spanish or Portuguese. The majority of studied women had medium incomes and attended private and/or state clinical centers. Women with a diagnosis of dementia that did not allow them to understand the questionnaires or who suffered from deafness or blindness, as well as those declining participation, were excluded.

Studied variables

The following data were collected: age (years), years of education (years), body mass index (BMI) (weight [kilograms] / squared height [meters]), parity or number of children, having a current partner (yes/no), sexual activity (at least one sexual intercourse in the last year, yes/no), housewife (yes/no), smoker (yes/no), inactive lifestyle (perform less than 75 min a week of intense aerobic physical activities as running, gym, tennis, etc. or less than 150 min a week of moderate aerobic physical activities as fast walking, cycling, calm sports and dancing [11], yes/no), postmenopausal stage (defined according to the Stages of Reproductive Aging Workshop [STRAW] + 10 criteria), hysterectomy (yes/no), bilateral oophorectomy (yes/no), systemic menopausal hormone therapy (MHT) use (yes/no), former MHT user (yes/no), hypertension (self-reported or on medication, yes/no), diabetes mellitus (self-reported or on medication, yes/no) and the use of antidepressants (yes/no), hypnotics (yes/no) or medication for dyslipidemia (yes/no).

We used the classic definition of POI as women presenting menopause before 40 years of age [1]. Further, women with POI were subclassified as 'idiopathic' or 'surgical POI' if the latter had a history of bilateral oophorectomy [12]. In this study, women 'without POI' were defined as those presenting menopause after 40 years of age.

Urogenital symptoms were evaluated with the urogenital domain of the Menopause Rating Scale (MRS). This instrument is composed of 11 items that assess menopausal symptoms which are grouped into three subscales: somatic, psychological and urogenital. The latter subscale assesses three items: sexual problems, bladder problems and dryness of the vagina. Each item can be graded by the subject from 0 (not present) to 4 (very severe). The MRS has previously been validated in the Spanish [13] and Portuguese (Brazil) [14] languages.

Sexual function was assessed with the six-item version of the Female Sexual Function Index (FSFI-6). This tool was first developed in the Italian language [15], and subsequently translated into Spanish to be used among middle-aged Spanish [16] and Latin American [17] women. Surveys in Brazil were carried out with the Portuguese FSFI-6 version [18]. The instrument consists of six questions each derived from one of the six domains of the original 19-item FSFI [19]: desire, arousal, lubrication, orgasm, satisfaction and pain. Each of the six items can be scored from 0 to 5 and the sum of these provides a total FSFI-6 score that is indicative of female sexual functioning. Lower total scores are indicative of worse sexual function.

Sample size calculation

StatCalc, a tool developed by the Centers for Disease Control and Prevention in the USA [20], suggests that a descriptive study comparing the mean scores of urogenital symptoms of the MRS between two groups with a confidence level of 95%, power of 80%, group ratio of 2:1 between controls and women with POI, and difference of 20% would require a sample size of 371 postmenopausal women and 742 controls; this is based on the assumption that the controls have a mean score of 2.5 ± 2.7 [5]. For the FSFI-6 analysis, a sample size of at least 41 women with POI and 82 controls would be required, assuming the same requirements of a confidence level of 95%, power of 80%, group ratio of 2:1 and difference of 20%; this is based on the assumption that the average score and standard deviation for the control group would be 20.0 ± 8.0 [16].

Statistical analysis

Statistical analysis was performed using the SPSS software package (version 21.0 for Windows; SPSS Inc., Chicago, IL, USA). Data are presented as the mean, standard deviation, median, interquartile range or frequency/percentage. The homogeneity of the variance was evaluated with the Levene test ($p > 0.05$). The Kolmogorov–Smirnov test was used to determine the normality of data distribution. According to this, differences between the studied numeric variables were analyzed with the Mann–Whitney *U*-test (non-parametric data) or the Student's *t*-test (parametric data). Logistic regression analysis was performed to obtain the best model that predicts higher scores of the urogenital domain of the MRS or worse sexual function (lower scores) evaluated with the FSFI-6. Both the independent variables and the covariates were categorized according to the median. The inclusion of different variables in the model was performed through a stepwise procedure, considering a 10% level as significant. The variance inflation factor was used to solve multicollinearity in a regression analysis (variance inflation factor <10). We also considered the different interactions between the variables found statistically significant in the bivariate analysis. The Omnibus and the Hosmer–Lemeshow tests were used to determine the adequacy of the regression model. For all calculations, $p < 0.05$ was considered statistically significant.

Ethical considerations

The study was approved by the ethics committee of the Southern Metropolitan Health Service, Santiago de Chile, Chile (Memorandum 15/2023; 22 June 2023) and complies with the Declaration of Helsinki. All participants were informed of the study, its aims and used tools, after which they provided written consent for participation.

Table 1. Clinical characteristics of women with POI and those without.

	POI			Without POI
	Idiopathic	*Surgical*	*All*	
Characteristic	(n = *264*)	(n = *137*)	(n = *401*)	(n = *789*)
Age (years)	52 [7]	53 [9]	53 [8]	56 [9][a]
BMI (kg/m^2)	24.6 [6.0]	26.0 [6.5]	25.6 [5.9]	25.3 [6.3]
Years of education	13.3 ± 4.6	12.8 ± 4.3	13.1 ± 4.5	13.4 ± 5.2
Housewives	93 (35.2)	55 (40.1)	148 (36.9)	293 (37.1)
Number of children	1.8 ± 1.4	2.2 ± 1.8[b]	2.0 [1.0]	2.0 [2.0][a]
With partner	191 (72.3)	96 (70.1)	287 (71.6)	576 (73.0)
With sexual activity	175 (66.3)	87 (63.5)	262 (65.3)	536 (67.9)
Never smoker	194 (73.5)	88 (64.2)	282 (70.3)	587 (74.4)
Inactive lifestyle	106 (40.2)	86 (62.8)[c]	192 (47.9)	421 (53.4)
MHT users	88 (33.3)	47 (34.3)	135 (33.7)	141 (17.9)[d]
Anxiolytics users	45 (17.0)	29 (21.2)	74 (18.5)	94 (11.9)[d]
Antidepressants users	64 (24.2)	42 (30.7)	106 (26.4)	109 (13.8)[d]
Hypnotics users	63 (23.9)	51 (37.2)[c]	114 (28.4)	150 (19.0)[d]
Hypertension or treatment	85 (32.2)	63 (46.0)[c]	148 (36.9)	232 (29.4)[d]
Diabetes mellitus or treatment	37 (14.0)	35 (25.5)[c]	72 (18.0)	92 (11.7)[d]
Hypercholesterolemia treatment	70 (26.5)	52 (38.0)[c]	122 (30.4)	185 (23.5)[d]

[a] $p < 0.01$ when POI and non-POI are compared, as determined with the Mann–Whitney *U*-test.
[b] $p < 0.01$ when POI types are compared, as determined with the Mann–Whitney *U*-test.
[c] $p < 0.01$ when POI types are compared, as determined with the chi-square test.
[d] $p < 0.01$ when POI and non-POI are compared, as determined with the chi-square test.
Data presented mean ± standard deviation, median [interquartile range] or frequency *n* (%). BMI, body mass index; MHT, menopause hormone therapy; POI, primary ovarian insufficiency.

Results

A total of 1302 postmenopausal women were invited to participate, of whom 1261 (96.1%) agreed and gave consent to participation. Sixty-one women (3.8%) were not included due to incomplete or erroneous data. Thus, data from 1190 women (91.4%) were analyzed. For the whole sample, the mean age was 55.3 ± 6.9 years, mean years of education 13.3 ± 5.0 years and mean BMI 26.4 ± 5.2 kg/m^2. In total, 37.1% of these women were housewives, the women had an average of 2.4 ± 1.8 children and 72.5% had a partner. Regarding lifestyle, 51.5% had an inactive lifestyle, 73.0% had never smoked and 67.1% had had sexual activity in the last 12 months. Among the used drugs, we must mention that 23.3% used MHT, 22.2% hypnotics, 18.1% antidepressants and 14.1% anxiolytics. The main cardiometabolic risk factors found in this population were obesity for 19.9% (BMI >30 kg/m^2), hypertension for 32.2%, hypercholesterolemia for 35.8% and diabetes mellitus for 14.0% (data not shown).

Clinical characteristics of women with POI and those without POI are presented in Table 1. Of the whole sample ($n = 1190$), 33.6% had POI – and 65.8% of these were idiopathic. Significant differences were found when comparing women with POI to those without POI. They were somewhat younger, had fewer children and used MHT, anxiolytics, antidepressants and hypnotics more frequently. In addition, they required a higher rate of therapy for hypertension, hypercholesterolemia and diabetes mellitus. Time since menopause onset was lower in women with POI when compared to non-POI women (7.7 ± 5.7 vs. 17.6 ± 8.2 years, $p < 0.05$). When comparing women with POI according to the type, those with surgical POI had higher BMI, inactive lifestyle and more children, in addition to more frequent use of hypnotics and medication for hypertension, hypercholesterolemia and diabetes.

Table 2 presents MRS urogenital domain and FSFI-6 scores (total and domain) among the studied women. Regarding urogenital symptoms, women with POI presented higher MRS urogenital domain scores (more severe symptoms) when compared to those without POI, mainly due to vaginal dryness. A similar trend was observed when comparing the type of POI (idiopathic vs. surgical). Regarding sexuality, this table also shows that women with POI display lower total FSFI-6 scores when compared to women without POI, which translates into worse sexuality and is related to lower desire, arousal and satisfaction scores.

To evaluate the association of POI with more intense urogenital symptoms and lower sexual function, we developed a logistic regression model that incorporated the significant covariates presented in Table 1. Given that the total scores of the urogenital MRS domain and the FSFI-6 between types of POI did not present significant differences, for the regression construction both types were integrated as a single group.

Table 2. MRS urogenital domain and FSFI-6 (total and domain) scores in studied women.

Parameter	POI			Without POI
	Idiopathic	Surgical	All	
	(n = 264)	(n = 137)	(n = 401)	(n = 789)
MRS urogenital domain				
Sexual problems	1.41 ± 1.41	1.39 ± 1.39	1.40 ± 1.40	1.33 ± 1.35
Bladder problems	0.63 ± 1.09	0.91 ± 1.33	0.73 ± 1.18	0.70 ± 1.17
Dryness of vagina	1.30 ± 1.37	1.63 ± 1.45[a]	1.41 ± 1.40	1.19 ± 1.29[b]
Total urogenital domain score	3.34 ± 2.99	3.93 ± 3.45	3.54 ± 3.16	3.15 ± 2.89[c]
FSFI-6				
Sexual desire	2.19 ± 1.10	2.28 ± 1.11	2.22 ± 1.11	2.37 ± 1.09[c]
Sexual arousal	1.87 ± 1.34	1.96 ± 1.46	1.90 ± 1.38	2.10 ± 1.48[c]
Lubrication	2.09 ± 1.62	1.91 ± 1.58	2.03 ± 1.61	2.18 ± 1.68
Orgasm	2.28 ± 1.84	2.04 ± 1.58	2.20 ± 1.76	2.35 ± 1.78
Satisfaction	3.13 ± 1.47	2.79 ± 1.23[a]	3.01 ± 1.40	3.28 ± 1.26[b]
Dyspareunia	2.33 ± 1.93	2.40 ± 1.84	2.36 ± 1.90	2.57 ± 1.99
Total FSFI-6 score	13.88 ± 7.61	13.38 ± 7.46	13.71 ± 7.55	14.77 ± 7.57[c]

[a]$p < 0.05$ when POI types are compared, as determined with Student's *t*-test.
[b]$p < 0.001$ when POI and non-POI are compared, as determined with Student's *t*-test.
[c]$p < 0.05$ when POI and non-POI are compared, as determined with Student's *t*-test.
Data presented as mean ± standard deviation. FSFI, (higher score, better sexuality); MRS, Menopause Rating Scale (higher score, more symptoms); POI, primary ovarian insufficiency.

Table 3. Factors related to more urogenital symptoms and lower sexual function: logistic regression model adjusted for covariates.

Factor	More urogenital symptoms[a]	Lower sexual function[b]
Hypnotics use	1.79 (1.32–2.42)	1.48 (1.07–2.05)
With partner	1.63 (1.24–2.14)	0.18 (0.13–0.25)
Diabetes	1.56 (1.06–2.28)	Non-significant
Hypercholesterolemia treatment	1.47 (1.09–1.97)	1.62 (1.19–2.20)
POI (idiopathic and surgical)	1.38 (1.06–1.80)	1.67 (1.25–2.25)
Age ≥55 years (median)	1.37 (1.07–1.76)	1.96 (1.49–2.57)
MHT users (systemic)	0.42 (0.31–0.56)	0.39 (0.28–0.54)
Years of studies ≥ 14 years (median)	Non-significant	0.60 (0.46–0.78)

[a]Menopause Rating Scale (MRS) urogenital symptoms: subscale score ≥3 (median).
[b]Six-item Female Sexual Function Index (FSFI-6): total score ≤16 (median).
Data presented as odds ratio (95% confidence interval). Logistic regression for more urogenital symptoms: Hosmer–Lemeshow = 0.012, variance inflation factor variables = 1027–1129. Logistic regression for lower sexual function: Hosmer–Lemeshow = 0.02, variance inflation factor variables = 1104–1436. MHT, menopause hormone therapy; POI, primary ovarian insufficiency.

Factors related to more urogenital symptoms and lower sexual function are presented in Table 3. POI (idiopathic and surgical) was associated with more severe urogenital symptoms (odds ratio [OR]: 1.38; 95% confidence interval [CI] 1.06–1.80) and lower sexual function (OR: 1.67; 95% CI 1.25–2.25). Among the other selected covariates for the model, the use of hypnotics, diabetes, older age, having a partner and receiving treatment for dyslipidemia (high cholesterol) were associated with more urogenital symptoms; in contrast, MHT was associated with fewer urogenital symptoms. Regarding sexuality, older age and the use of hypnotics and medication for hypercholesterolemia were factors associated with lower sexual function. On the other hand, having a partner, MHT use and a higher level of education were associated with better sexual function (higher FSFI-6 scores).

Discussion

This study shows that women with POI (idiopathic and surgical) have more urogenital complaints and lower sexual function than women who present menopause at a later age. Furthermore, we observed that there were no differences in urogenital symptoms and sexual function when women were compared according to POI type. Women with surgical menopause display lower estradiol levels than women who present menopause naturally and at a normal age range [21]; in some sense, this suggests that women with idiopathic POI have hypoestrogenism similar to that of women with surgical POI and lower than non-POI women. We have not found studies that simultaneously compare estradiol levels in women with idiopathic POI to those with surgical menopause before age 40 years.

The increase in urogenital discomfort in women with POI was expected since we know the importance of estrogen in vaginal trophism. Postmenopausal vaginal atrophy in normal menopausal women correlates with decreased estradiol and does not depend on the time since menopause [22]. Furthermore, breast cancer patients who use antiestrogens, such as aromatase inhibitors, more often have moderate or severe vaginal atrophy, a more atrophic cytohormonal evaluation and significantly higher vaginal pH when compared to controls [23]. The use of estrogens, both local and systemic, can alleviate urogenital discomfort [24]. Systemic estrogen is preferred when associated climacteric symptoms deteriorate the quality of life [25].

Human female sexuality encompasses a wide range of behaviors and processes, including female sexual identity and sexual, physiological, psychological, social and cultural behavior [26]. It is the reflection of the concept of health defined by the World Health Organization (WHO) as a state of physical, psychological and social well-being. Therefore, women with POI present urogenital symptoms with greater severity that impact their sexuality. This study found that women with POI present a greater impairment of global sexual function, including its components: sexual desire, arousal and satisfaction. Interestingly, the urogenital symptoms of the FSFI-6 – decreased lubrication and dyspareunia – did not differ between women with POI and non-POI women, suggesting that factors other than urogenital ones could be modulating the observed decrease in sexuality among women with POI.

A Brazilian study also found that women with POI had a higher prevalence of sexual dysfunction compared to women with normal gonadal function and more difficulties with satisfaction, lubrication, orgasm, pain and arousal; however, there were no differences between the two groups in terms of desire [27]. The difference in our results could be determined by the younger age of the women in that study. In a subsequent publication by the same research group and with a larger number of cases (80 women), it was observed that women with POI had impaired sexual function, determined

mainly by changes in arousal and desire. Aspects related to lubrication and dyspareunia complaints had lower importance [28]; a situation that is consistent with our findings.

After adjusting for covariates, our logistic regression model determined the independent association of POI with more urogenital symptoms and with lower sexual function, despite women with POI being younger and having fewer years since menopause onset compared to non-POI women. A study by de Almeida et al. showed that women with POI have a nearly three-fold increased likelihood of having sexual dysfunction (OR: 2.78, 95% CI 1.29–5.98) [27]. In our model, the use of hypnotics presented the highest odds associated with more urogenital symptoms. This, which at first glance appears unconvincing, could be explained because patients who use hypnotics have insomnia. In one study by our research group, carried out in middle-aged women from Latina America who were evaluated with the Athens Insomnia Scale, it was found the use of hypnotics was associated with an OR of 10.32 (95% CI 8.25–10.92) of having more urogenital symptoms [29]. Additionally, poor sleep quality (assessed with the Pittsburgh Sleep Quality Index) was associated with an OR of 6.82 (95% CI 5.56–8.38) for experiencing urogenital discomfort [29].

In relation to sexual function, in our logistic regression advanced age presented the highest odds for lower sexual function, followed by POI. We have previously mentioned that factors other than urogenital factors could be modulating the decrease in sexual function observed in women with POI in our study. These women present high levels of depression and perceived stress, and low levels of self-esteem and life satisfaction, compared to the general population [30]; these conditions carry a greater risk of having sexual disorders [31].

Our results show a deterioration of vaginal and sexual health in women with POI, which will translate into an impairment of quality of life. Therefore, the importance of the statements issued by the International Menopause Society (IMS) and the North American Menopause Society (NAMS) should be emphasized. The IMS notes that POI should be a public health priority so that these women be supported and informed, and health-care professionals be given adequate education and resources to identify, manage and investigate women at risk of POI at the earliest possible stage. Preventive measures such as optimizing lifestyle and advice regarding long-term hormone replacement at least until the age of natural menopause should be offered [32]. On the other hand, the NAMS considers that hormone therapy is US Food and Drug Administration (FDA)-approved for women with hypoestrogenism resulting from hypogonadism, bilateral oophorectomy or POI. Health benefits of hormone therapy have been shown, with greater evidence for women with menopausal symptoms due to bilateral oophorectomy [1].

Regarding the limitations of the present study, one should note its observational nature which does not allow for the analysis of causality. Additionally, the patients included in the study were attending both private and public consultations, and therefore the conclusions drawn here cannot be generalized to the larger Latin American population, which is primarily served by the public health sector. In addition, preventive health checks are not easily available in Latin America, which could have resulted in selection bias. Another potential limitation of our study could be not comparing women experiencing POI in their first few years of postmenopause with women of the same age who are still menstruating. Such a comparison might seem more appropriate since the symptomatic differences would be more noticeable when compared to young women. To highlight this, one can mention, for instance, the review by Calik-Ksepka et al. regarding the impact of menopause on genitourinary symptoms, which revised studies that addressed women in the first few years of amenorrhea [33]; the same feature can be found in Li et al.'s meta-analysis [6]. Instead, we aimed to study the long-term effects of POI on urogenital and sexual health.

Despite these limitations, however, our study does have several strengths, such as the representation of common characteristics of Latin American women, including ethnicities, cultural and socioeconomic factors, and social female roles. Furthermore, the study included a multinational sample of women living in Latin America, and validated tools were used specifically for that population. In addition, all patients were evaluated by doctors specialized in female health, and valid statistical methods were used to control for separate potential confounders.

We may conclude by pointing out that POI, regardless of whether it is idiopathic or secondary to bilateral oophorectomy, is associated with symptoms that impair vaginal health and sexuality. For this reason, doctors must be aware of this condition to perform a prompt diagnosis and ensure appropriate therapeutic measures that will prevent quality of life impairment.

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References

[1] "The 2022 Hormone Therapy Position Statement of the North American Menopause Society" Advisory Panel. The 2022 hormone therapy position statement of the North American Menopause Society. Menopause. 2022;29(7):767–794.

[2] Bidet M, Bachelot A, Bissauge E, et al. Resumption of ovarian function and pregnancies in 358 patients with premature ovarian failure. J Clin Endocrinol Metab. 2011;96(12):3864–3872. doi: 10.1210/jc.2011-1038.

[3] Coulam CB, Adamson SC, Annegers JF. Incidence of premature ovarian failure. Obstet Gynecol. 1986;67(4):604–606.

[4] Li M, Zhu Y, Wei J, et al. The global prevalence of premature ovarian insufficiency: a systematic review and meta-analysis. Climacteric. 2023;26(2):95–102. Apr doi: 10.1080/13697137.2022.2153033.
[5] Chedraui P, Blümel JE, Baron G, et al. Impaired quality of life among middle aged women: a multicentre Latin American study. Maturitas. 2008;61(4):323–329. doi: 10.1016/j.maturitas.2008.09.026.
[6] Li XT, Li PY, Liu Y, et al. Health-related quality-of-life among patients with premature ovarian insufficiency: a systematic review and meta-analysis. Qual Life Res. 2020;29(1):19–36. doi: 10.1007/s11136-019-02326-2.
[7] Tsiligiannis S, Panay N, Stevenson JC. Premature ovarian insufficiency and long-term health consequences. Curr Vasc Pharmacol. 2019;17(6):604–609. doi: 10.2174/1570161117666190122101611.
[8] Portman DJ, Gass ML, Vulvovaginal Atrophy Terminology Consensus Conference Panel. Genitourinary syndrome of menopause: new terminology for vulvovaginal atrophy from the International Society for the Study of Women's Sexual Health and the North American Menopause Society. J Sex Med. 2014;11(12):2865–2872. doi: 10.1111/jsm.12686.
[9] Blümel JE, Chedraui P, Baron G, et al. Menopausal symptoms appear before the menopause and persist 5 years beyond: a detailed analysis of a multinational study. Climacteric. 2012;15(6):542–551. doi: 10.3109/13697137.2012.658462.
[10] Ishizuka B. Current understanding of the etiology, symptomatology, and treatment options in Premature Ovarian Insufficiency (POI). Front Endocrinol (Lausanne). 2021;12:626924. doi: 10.3389/fendo.2021.626924.
[11] WHO. Physical activity. [cited 2022 Dec 21]. https://www.who.int/es/news-room/fact-sheets/detail/physical-activity.
[12] NAMS. Menopause glossary. [cited 2023 Sept 21]. https://www.menopause.org/for-women/menopause-glossary#S.
[13] Chedraui P, Aguirre W, Hidalgo L, et al. Assessing menopausal symptoms among healthy middle aged women with the Menopause Rating Scale. Maturitas. 2007;57(3):271–278. doi: 10.1016/j.maturitas.2007.01.009.
[14] ZEG Berlin. [cited 2023 Nov 16]. https://zeg-berlin.de/expertise/diagnostics-tools/menopause-rating-scale/languages/.
[15] Isidori AM, Pozza C, Esposito K, et al. Development and validation of a 6-item version of the female sexual function index (FSFI) as a diagnostic tool for female sexual dysfunction. J Sex Med. 2010;7(3):1139–1146. doi: 10.1111/j.1743-6109.2009.01635.x.
[16] Pérez-López FR, Fernández-Alonso AM, Trabalón-Pastor M, et al. Assessment of sexual function and related factors in mid-aged sexually active Spanish women with the six-item Female Sex Function Index. Menopause. 2012;19(11):1224–1230. doi: 10.1097/gme.0b013e3182546242.
[17] Chedraui P, Pérez-López FR, Sánchez H, et al. Assessment of sexual function of mid-aged Ecuadorian women with the 6-item Female Sexual Function Index. Maturitas. 2012;71(4):407–412. doi: 10.1016/j.maturitas.2012.01.013.
[18] Pacagnella R, Vieira EM, Rodrigues OMJr, et al. Adaptação transcultural do Female Sexual Function Index. Cad Saude Publica. 2008;24(2):416–426. doi: 10.1590/s0102-311x2008000200021
[19] Rosen R, Brown C, Heiman J, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. 2000;26(2):191–208.
[20] Centers for Disease Control and Prevention. StatCalc: Statistical Calculators. [cited 2023 Apr 23]. https://www.cdc.gov/epiinfo/user-guide/statcalc/statcalcintro.html.
[21] Korse CM, Bonfrer JM, van Beurden M, et al. Estradiol and testosterone levels are lower after oophorectomy than after natural menopause. Tumour Biol. 2009;30(1):37–42. doi: 10.1159/000199449.
[22] Repse-Fokter A, Takac I, Fokter SK. Postmenopausal vaginal atrophy correlates with decreased estradiol and body mass index and does not depend on the time since menopause. Gynecol Endocrinol. 2008;24(7):399–404. doi: 10.1080/09513590802217290.
[23] Baumgart J, Nilsson K, Stavreus-Evers A, et al. Urogenital disorders in women with adjuvant endocrine therapy after early breast cancer. Am J Obstet Gynecol. 2011;204(1):26.e1-7–26.e7. doi: 10.1016/j.ajog.2010.08.035.
[24] Lethaby A, Ayeleke RO, Roberts H. Local oestrogen for vaginal atrophy in postmenopausal women. Cochrane Database Syst Rev. 2016;2016(8):CD001500. doi: 10.1002/14651858.CD001500.pub3.
[25] Pérez-López FR, Phillips N, Vieira-Baptista P, et al. Management of postmenopausal vulvovaginal atrophy: recommendations of the International Society for the Study of Vulvovaginal Disease. Gynecol Endocrinol. 2021;37(8):746–752. doi: 10.1080/09513590.2021.1943346.
[26] WHO. Health topic. Sexual health. [cited 2023 Oct 14]. https://www.who.int/health-topics/sexual-health#tab=tab_2.
[27] de Almeida DM, Benetti-Pinto CL, Makuch MY. Sexual function of women with premature ovarian failure. Menopause. 2011;18(3):262–266. doi: 10.1097/gme.0b013e3181f4318d.
[28] Benetti-Pinto CL, Soares PM, Giraldo HP, et al. Role of the different sexuality domains on the sexual function of women with premature ovarian failure. J Sex Med. 2015;12(3):685–689. doi: 10.1111/jsm.12743.
[29] Blümel JE, Cano A, Mezones-Holguín E, et al. A multinational study of sleep disorders during female mid-life. Maturitas. 2012;72(4):359–366. doi: 10.1016/j.maturitas.2012.05.011.
[30] Liao KL, Wood N, Conway GS. Premature menopause and psychological well-being. J Psychosom Obstet Gynaecol. 2000;21(3):167–174. doi: 10.3109/01674820009075624.
[31] Blümel JE, Chedraui P, Baron G, et al. Sexual dysfunction in Middle-aged women: a multicenter Latin American study using the Female Sexual Function Index. Menopause. 2009;16(6):1139–1148. doi: 10.1097/gme.0b013e3181a4e317.
[32] Panay N, Anderson RA, Nappi RE, et al. Premature ovarian insufficiency: an International Menopause Society White Paper. Climacteric. 2020;23(5):426–446. doi: 10.1080/13697137.2020.1804547.
[33] Calik-Ksepka A, Grymowicz M, Rudnicka E, et al. Signs and symptoms, evaluation, and management of genitourinary tract consequences of premature ovarian insufficiency. Prz Menopauzalny. 2018;17(3):131–134. doi: 10.5114/pm.2018.78558.