

## WOMEN'S SEXUAL HEALTH

## Impact Of Vulvovaginal Atrophy Of Menopause In Spanish Women: Prevalence And Symptoms According To The EVES Study



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## ABSTRACT

**Introduction:** The prevalence of menopausal women with confirmed vulvovaginal atrophy (VVA) oscillates between 67–98%.

**Aim:** To assess the prevalence of postmenopausal women with VVA confirmed by gynecologic clinical assessment among all women attending menopause centers in Spain, as well as to describe the impact of VVA on quality of life and sexual functioning.

**Methods:** Women aged 45–75 years old with the last menstrual period >12 months before were included in a cross-sectional study.

**Main Outcome Measures:** Women with  $\geq 1$  VVA symptoms filled out a number of questionnaires, including EuroQoL, Day-to-Day Impact of Vaginal Aging, Female Sexual Function Index, and Female Sexual Distress Scale-revised. A gynecologic examination was performed to confirm diagnosis.

**Results:** 1,177 evaluable patients were included. VVA was confirmed in 87.3% of the patients. Almost 80% of women who acknowledged being sexually active ( $n = 717$ ) presented pain during intercourse. As compared with patients without confirmed VVA ( $n = 66$ ), patients with confirmed VVA ( $n = 1,028$ ) were significantly older ( $P < .0001$ ), had lower rates of sexual activity ( $P < .05$ ), and used more VVA treatments ( $P < .05$ ). Severe vaginal atrophy and severe vulvar atrophy were more prevalent in VVA-confirmed women ( $P < .0001$ , in both cases). No differences regarding the confirmation of VVA were observed for EuroQoL and Day-to-Day Impact of Vaginal Aging quality-of-life questionnaires. Sexual function measured through the Female Sexual Function Index score was significantly reduced in sexually-active patients with confirmed VVA ( $P < .05$ ).

**Conclusion:** VVA signs and symptoms are highly prevalent in Spanish postmenopausal women. Confirmation of VVA diagnosis was associated with impaired sexual function. The early recognition of VVA symptoms should be actively promoted in medical practice, instead of waiting until signs appear to exclude other reasons for VVA and to manage treatment effectively. **Palacios S, González SP, Fernández-Abellán M, et al. Impact of Vulvovaginal Atrophy of Menopause in Spanish Women: Prevalence and Symptoms According to the EVES Study. Sex Med 2019;7:207–216.**

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**Key Words:** Vulvovaginal Atrophy; Prevalence; Menopause; EQ5D3L; DIVA; Gynecologic Exam

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## INTRODUCTION

Vulvovaginal atrophy (VVA) is a relatively common condition after menopause. The reduction in plasma levels of estrogen leads to physiological, histologic, and anatomic changes in the lower genital and urinary tracts, which are rich in estrogen receptors. Estrogen levels play a significant role in maintaining thickness and urogenital territory moisture through the safeguarding of the mucopolysaccharide and collagen content of the mucosa.<sup>1</sup> The main consequence of a hypoestrogenic environment is thinning of the vaginal epithelium and alteration to squamous and stratified tissue that promotes loss of elasticity and blood flow. Additionally, vaginal pH increases  $>5$  due to changes in vaginal flora.<sup>2</sup> The associated group of VVA symptoms after postmenopausal estrogen deficiency were recently grouped together as genitourinary syndrome of menopause,<sup>3</sup> are grouped under genital, sexual, and urinary origin,<sup>4</sup> and include loss of vaginal elasticity, dryness, decreased lubrication, irritation, and dyspareunia, among others. Notwithstanding the impact of VVA on an aging population in Spain and Europe,<sup>5</sup> in many cases, menopausal women considered their symptoms as the normal outcome of age, and so its clinical diagnosis is underreported, and its treatment status remains unnoticed.<sup>6</sup>

The prevalence of menopausal women with symptoms of VVA has been reported to be about 50%,<sup>7,8</sup> whereas the percentage of these patients with VVA confirmed by examination oscillates between 67–98%.<sup>9</sup> Clinical symptoms of VVA are linked with major psychosocial distress<sup>10</sup> and underreporting that leads to chronicity, disease progression, and a considerable impact on women's daily living,<sup>6,11</sup> despite the currently available therapeutic options. Treatment for VVA includes local moisturizers, lubricants, and local estrogens, as well as systemic estrogen therapy when other postmenopausal symptoms were observed. In recent years (January 2015), the selective estrogen receptor modulator ospemifene has also been approved by the European Medicines Agency for the treatment of moderate to severe symptomatic VVA in postmenopausal women who are not candidates for treatment with local vaginal estrogens.

The objective of the present analysis of the European Vulvovaginal Epidemiology Survey (EVES)<sup>12</sup> was to assess the prevalence of postmenopausal women with VVA confirmed by gynecologic clinical assessment among all postmenopausal women attending menopause centers in Spain. Additionally, other aims of the analyses included assessing the characterization of the VVA Spanish population (including lifestyle, reproductive history, sexual behavior, chronic diseases, treatment), as well as the assessment of the overall impact of VVA on quality of life and sexual functioning in Spain. Surveys on this issue in Europe and Spain have usually been performed following online-based questionnaires.<sup>11,13,14</sup> However, this analysis is based on a new study performed with a face-to-face survey, together with the confirmatory gynecologic examination, and has a different and innovative value for the characterization of this population of postmenopausal women in Spain.

## MATERIAL AND METHODS

### Design and Patients

A cross-sectional study, based on a face-to-face survey addressed to postmenopausal women, was performed in 44 menopausal and gynecologic clinics from Italy and Spain.<sup>12</sup> The study was approved by the Institutional Review Board of the participant sites and conducted in accordance with the Declaration of Helsinki. Written informed consent was provided by all patients before study entry. This analysis was focused on postmenopausal women ( $>12$  months after the last reported menstrual period), aged 45–75 years old, and included in the 4 menopause and 17 Spanish gynecology centers.

### Study Procedures

Women were asked to participate in the survey when attending menopause/gynecologic clinics. Initially, investigators performed a menopausal status assessment (including a medical history to identify contributing factors, alternative causes, and therapeutic interventions) and a pelvic examination specifically to identify signs consistent with VVA (Survey Part A), following guidelines evidence<sup>15</sup>. For women who did not report any VVA symptoms, no additional data were collected. On the other side, women reporting  $\geq 1$  VVA symptoms completed parts B and C of the survey. Part B asked for demographic details, lifestyle, medical history, and treatment information. In addition, women scored 19 VVA-related complaints about vaginal, vulvar, and urinary symptoms using a 4-score severity scale (absent, mild, moderate, and severe). For each type of symptoms (vaginal, vulvar, and urinary), we obtained a score of severity. Part C of the survey consisted of questions measuring the impact of VVA on quality of life and sexual function. The EuroQoL (EQ) questionnaire (EQ5D3L)<sup>16</sup> obtains a score measuring mobility, self-care, activities of daily living, pain-discomfort, and anxiety-depression; it also includes a visual analog scale for current health status. The EQ5D3L health states may be converted into a single summary utility index, ranging from 0–1, by applying a prespecified formula that essentially attaches values (weights) to each of the levels in each dimension. The Day-to-Day Impact of Vaginal Aging (DIVA)<sup>17</sup> questionnaire scores 4 dimensions measuring quality of life (daily activities, emotional well-being, sexual functioning, and self-concept and body image). The self-concept and body image dimensions are related to those items that may affect feelings about oneself and body conception.<sup>17</sup> The patients also filled out the Female Sexual Function Index (FSFI),<sup>18</sup> which measures sexual activity, and the Female Sexual Distress Scale-revised 2005 (FSDS-R), which depicts sexual concerns and distress.<sup>19</sup>

A final gynecologic clinical assessment for the presence of VVA was performed by investigators (1 per center; all investigators followed the same guideline parameters to perform the gynecologic examination<sup>15</sup>) consisting of a physical examination, with additional tests (including the pelvic examination and a vaginal pH assessment) carried out in accordance with routine gynecologic clinical practice (Part D). The investigators filled out all

signs of VVA to calculate the Vaginal Health Index<sup>20</sup> and the Vulva Health Index.<sup>13</sup> Vaginal Health Index scores overall elasticity, fluid secretion, vaginal pH, aspect of epithelial mucosa and moisture all together between 5–25, with lower scores corresponding to more urogenital atrophy (total score <15 corresponds to vaginal atrophy). The Vulva Health Index scores the aspect of labia, urethra, clitoris, and introitus, as well as elasticity, petechiae, and pain during intercourse all together between 0–24, with higher scores corresponding with greater vulvar atrophy. Vulvar atrophy is suggested with a Vulva Health Index >8 or if there is a score of 3 (severe) in any category.

## Statistical Analyses

Approximately 1,000 Spanish patients were planned for completion of the face-to-face survey to obtain a sufficiently representative sample size of the postmenopausal women with VVA symptoms in Spain. The output of the sample size calculation was based on random sampling from an infinite population and on the assumption of normal approximation ( $P = .500$ ,  $\Delta = 0.030$ ,  $\alpha = 0.05$ ). Specifically, we applied a sample size calculation based on population proportion estimation. We considered the proportion among all postmenopausal women attending menopause Spanish centers with a VVA confirmed by gynecologic clinical assessment in approximately 0.50. A 95% CI was desired, with precision  $\Delta = 0.030$ . Thus, a sample size of 1,068 participants was considered. Taking into consideration that the population referring  $\geq 1$  VVA symptom could represent 40–60% of the population attending the menopause centers, and that 10% of questionnaires were not expected to be adequately filled in, a total population of 1,167 subjects was initially considered to be recruited.

For continuous variables, descriptive statistics include means, range, SD, and range for normally distributed variables, as well as medians and interquartile range. No missing data were imputed. Categorical variables were summarized as counts and percentages. The relationship between confirmed diagnosis of VVA and demographic characteristics was performed with  $\chi^2$  testing. Student's  $t$ -test was used to compare quantitative variables.

## RESULTS

From a total of 2,412 postmenopausal women initially enrolled in the European EVES study (from Italy and Spain), 1,182 (49%) women were recruited in Spanish outpatient menopause ( $n = 357$ ; 30%) or gynecology centers ( $n = 825$ ; 70%). Among them, 1,177 women were included and evaluable for screening of symptoms (part A), whereas 1,094 women complained of  $\geq 1$  symptom related to VVA, filled out the questionnaires, and had an objective gynecologic examination (evaluable for parts B,C,D) (see flowchart in Figure 1).

Mean age  $\pm$  SD of the included patients was  $58.9 \pm 6.2$  years, and they had been in menopause for  $10.1 \pm 6.8$  years. Among these 1,094 women, 958 (87.6%) experienced physiological

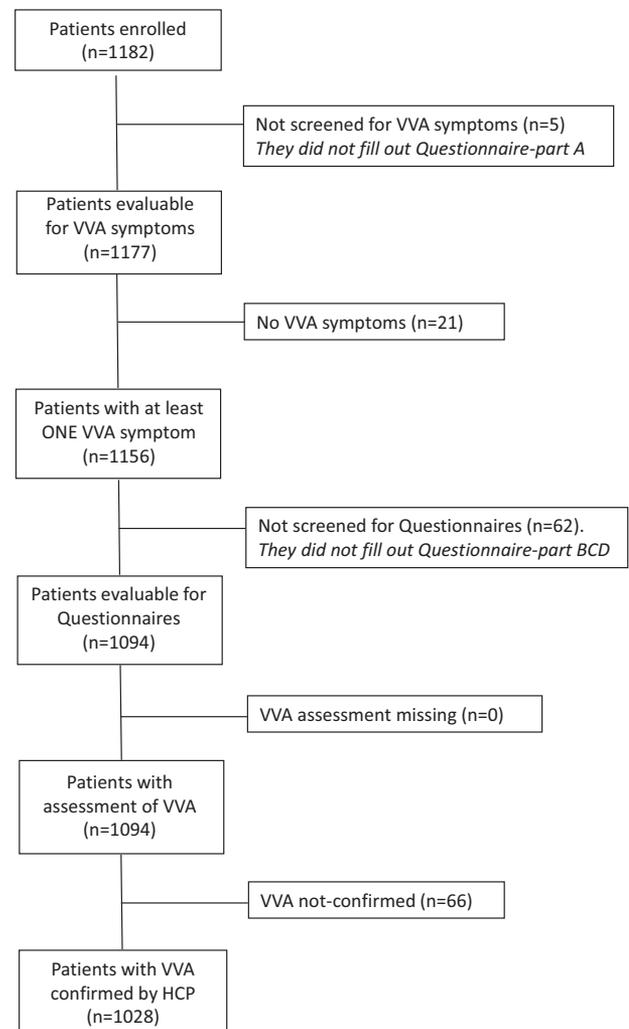


Figure 1. Study flow-chart of Spanish participants.

menopause, 99 (9.0%) had surgically induced menopause, and 37 (3.4%) had menopause promoted by medication. Demographic characteristics of the patients in subpopulations are listed in Table 1, with statistically significant differences detected in age, time since onset of menopause, type of menopause, and relationship status between women with VVA confirmed and those not confirmed under gynecologic assessment. No significant differences between included ( $n = 1,094$ ) and not included women ( $n = 88$ ) were observed for age, age at last menstruation, time since onset of menopause, and type of menopause. The most frequent events in the gynecologic history of the included population involved abortion/miscarriage (25.3%), hysterectomy (14.9%), and breast disease (9.7%). In addition, chronic diseases were observed in 69.0% of the patients (see Table 1 for details), with hypertension and hypercholesterolemia being the most globally reported chronic diseases for the whole sample. This was confirmed for women with an objective VVA that showed the highest prevalence in these 2 comorbid diseases (20.7% and 18.5%, respectively). In the case of non-confirmed VVA, the most prevalent chronic disease was anxiety (16.7%), followed by hypercholesterolemia (13.6%). Anxiety was significantly more

**Table 1.** Baseline characteristics of the patients

	With $\geq 1$ VVA symptom and VVA assessment (n = 1,094)	With $\geq 1$ VVA symptom and VVA assessment (N = 1,094)		P*
		No VVA confirmed (n = 66)	VVA confirmed (N = 1,028)	
Age (y), mean $\pm$ SD [Range]	58.9 $\pm$ 6.2 [45–76]	53.5 $\pm$ 5.6 [45–75]	59.2 $\pm$ 6.1 [45–76]	.000
Age at last menstruation (y), mean $\pm$ SD [Range]	48.8 $\pm$ 4.9 [10–65]	48.3 $\pm$ 4.0 [34–55]	48.9 $\pm$ 4.9 [10–65]	.499
Time since menopause (y), mean $\pm$ SD [range]	10.1 $\pm$ 6.8 [1–48]	5.2 $\pm$ 5.1 [1–28]	10.4 $\pm$ 6.8 [1–48]	.000
Type of menopause, n (%)				.000
Natural	958 (87.6)	49 (74.2)	909 (88.4)	
Induced by medications	37 (3.4)	10 (15.2)	27 (2.6)	
Surgical	99 (9.0)	7 (10.6)	92 (8.9)	
BMI, mean $\pm$ SD [Range]	26.0 $\pm$ 4.5 [15.3–49.3]	25.9 $\pm$ 4.5 [17.7–42.2]	26.0 $\pm$ 4.5 [15.3–49.3]	.798
Relationship status, n (%)				.040
Married	800 (73.1)	43 (66.2)	757 (77.2)	
Single	98 (9.0)	10 (15.4)	88 (9.0)	
Widowed	59 (5.4)	2 (3.1)	57 (5.8)	
In a relationship	89 (8.1)	10 (15.4)	79 (8.1)	
Education, n (%)				.155
Elementary	361 (33.5)	27 (41.5)	334 (33.0)	
High school	374 (34.2)	24 (36.9)	350 (34.6)	
Graduate	343 (31.4)	14 (21.5)	329 (32.5)	
Employment status (Yes), n (%)	616 (56.1)	43 (65.2)	573 (56.6)	.132
Tobacco use (Yes), n (%)	235 (21.5)	27 (40.9)	208 (20.3)	.000
Treatments, n (%)				.023
None	536 (49.0)	41 (62.1)	497 (48.3)	
At least 1 treatment used	572 (52.3)	25 (37.9)	547 (53.2)	
No. of treatments used				
1	441 (40.3)	20 (30.3)	421 (41.0)	
2	121 (11.1)	4 (6.1)	117 (11.4)	
3	10 (0.9)	1 (1.5)	9 (0.9)	
Non-hormonal therapy applied vaginally, n (%)	464 (42.4)	22 (33.3)	442 (43.0)	.157
Hormonal (estrogen-containing) vaginally, n (%)	178 (16.3)	4 (6.1)	174 (16.9)	.016
Hormonal (estrogen-containing) systemic, n (%)	48 (4.4)	4 (6.1)	44 (4.2)	.712
Effectiveness, n (%)				.564
No relief	26 (5.3)	1 (5.3)	25 (5.3)	
Low relief	131 (26.5)	3 (15.8)	128 (26.9)	
Moderate relief	139 (28.1)	6 (31.6)	133 (28.0)	
Good relief	145 (29.4)	5 (26.3)	140 (29.5)	
High relief	53 (10.7)	4 (21.1)	49 (10.3)	
Treatment period, n (%)				.042
$\leq 1$ week	27 (5.5)	0 (0.0)	27 (5.7)	
1–4 weeks	53 (10.8)	6 (33.3)	47 (10.0)	
1–3 months	62 (12.7)	0 (0.0)	62 (13.2)	
3–6 months	62 (12.7)	2 (11.1)	60 (12.7)	
$> 6$ months	285 (58.3)	10 (55.6)	275 (58.4)	

(continued)

Table 1. Continued

	With $\geq 1$ VVA symptom and VVA assessment (n = 1,094)	With $\geq 1$ VVA symptom and VVA assessment (N = 1,094)		P*
		No VVA confirmed (n = 66)	VVA confirmed (N = 1,028)	
Overall satisfaction with the treatment, n (%)				.498
Very low satisfaction	30 (6.0)	1 (5.9)	29 (6.0)	
Low satisfaction	99 (19.9)	1 (5.9)	98 (20.4)	
Moderate satisfaction	184 (36.9)	6 (35.3)	178 (37.0)	
High satisfaction	138 (27.7)	6 (35.3)	132 (27.4)	
Very high satisfaction	47 (9.4)	3 (17.6)	44 (9.1)	
Reason for not being satisfied, n (%)				.224
Not effective enough	121 (45.1)	4 (50.0)	117 (45.0)	
Worried about side effects	31 (11.6)	3 (37.5)	28 (10.8)	
Too expensive	18 (6.7)	0 (0.0)	18 (6.9)	
Difficult or unable to apply vaginally	14 (5.2)	0 (0.0)	14 (5.4)	
Messiness of treatment	56 (20.9)	1 (12.5)	55 (21.2)	
Other	28 (10.4)	0 (0.0)	28 (10.8)	
Currently sexually active (Yes), n (%)	717 (66.3)	47 (71.2)	670 (66.0)	.017
Intercourse (No./mo), mean $\pm$ SD [Range]	4.2 $\pm$ 3.4 [0-30]	5.7 $\pm$ 3.7 [0-16]	4.1 $\pm$ 3.3 [0-30]	.000
Caucasian ethnic group, n (%)	921 (89.7)	62 (93.9)	859 (89.4)	.023
Childbirth (Yes), n (%)	899 (82.9)	61 (92.4)	838 (82.3)	.029
Abortion/miscarriage, n (%)	267 (25.3)	21 (32.8)	246 (24.8)	.154
Chronic diseases (Yes), n (%) <sup>†</sup>	755 (69.0)	39 (59.1)	716 (69.6)	.072
Hypertension	219 (20.0)	6 (9.1)	213 (20.7)	.069
Hypercholesterolemia	199 (18.2)	9 (13.6)	190 (18.5)	.712
Hypothyroidism	133 (12.2)	4 (6.1)	129 (12.5)	.282
Osteoporosis	126 (11.5)	4 (6.1)	122 (11.9)	.377
Anxiety	112 (10.2)	11 (16.7)	101 (9.8)	.033
Arthritis	109 (10.0)	6 (9.1)	103 (10.0)	.816
Surgery for prolapse/urinary incontinence, n (%)	46 (4.3)	1 (1.5)	45 (4.5)	.253
Breast disease (Yes), n (%)	105 (9.7)	11 (16.7)	94 (9.3)	.052
If yes, Benign <sup>‡</sup>	18 (17.1)	1 (9.1)	17 (18.1)	
If yes, Malignant <sup>‡</sup>	76 (72.4)	10 (90.9)	66 (70.2)	
Hysterectomy, n (%)	161 (14.7)	7 (10.6)	154 (15.2)	.355

BMI = body mass index; VVA = vulvovaginal atrophy.

Totals and percentages calculated among the total number of available responses for each variable.

\*No-VVA vs VVA confirmed comparisons.

<sup>†</sup>Diseases with 10% or more are shown. Fisher exact test calculated for each chronic disorder among the total patients with chronic disorders (n = 39 and n = 716).

<sup>‡</sup>Percentages calculated among the total of patients with breast disease.

prevalent in the VVA-confirmed group compared with women without a confirmed VVA diagnosis ( $P = .033$ ).

Regarding the primary objective, the prevalence of postmenopausal women with VVA confirmed by gynecologic clinical assessment among all postmenopausal women attending menopause centers in Spain was 87.3% (1,028 of 1,177). In relation to secondary objectives, the prevalence of women with  $\geq 1$  symptom possibly related to VVA was 98.2% (1,156 of 1,177 enrolled women), for whom the mean number of symptoms was  $5.4 \pm 2.6$  (range 1–14) and the most common symptom was vaginal dryness (90.8%), followed by pain during intercourse (72.2%) and burning (63.3%), as shown in Table 2. Within

those women who acknowledged being sexually active (n = 717), 79.4% reported pain during the intercourse.

Women whose VVA was confirmed by their physician (n = 1,028) were on average 5.7 years older than those whose VVA was not confirmed (n = 66) ( $P < .0001$ ). Similarly, they presented an average of 5.2 years more ( $P < .0001$ ) after the onset of menopause. Patients with confirmed VVA also presented significantly lower rates of menopause induced by medications ( $P < .0001$ ). VVA confirmation was also associated with tobacco use ( $P < .0001$ ), lower sexual activity ( $P < .05$ ) and higher use of VVA treatments ( $P < .05$ ) (Table 1).

Vulvovaginal discomfort was evaluated for all women presenting  $\geq 1$  symptom and who had completely filled out questionnaires by using a rating scale for severity. Symptoms by main category (vaginal, vulvar, urinary) and the resulting scores were compared between women whose VVA was confirmed or not by their physician during gynecologic visit (Table 3). The score for severity was significantly higher in the VVA-confirmed group as compared with the VVA not confirmed group for vaginal and vulvar pooled symptoms, as well as for the total symptom score. The mean Vaginal Health Index was significantly lower in Spanish women whose VVA was confirmed by their physician ( $12.1 \pm 3.4$  vs  $17.9 \pm 2.4$ , respectively;  $P < .0001$ ), and, overall, vaginal atrophy as defined by a Vaginal Health Index  $< 15$  was more prevalent in VVA-confirmed women (78.4% vs 6.1%,  $P < .0001$ ). The mean Vulva Health Index was higher in women whose VVA was confirmed by their physician ( $10.3 \pm 4.5$  vs  $4.1 \pm 2.2$ ,  $P < .0001$ ), and, overall, severe vulvar atrophy (Vulva Health Index  $> 8$  or a score of 3/“severe” in any category) was highly prevalent in women with confirmed VVA (67.0%) in comparison with women with no VVA, in whom it was confirmed to be absent ( $P < .0001$ ).

Confirmation of VVA by the physician after vaginal examination is associated with a trend to lower current health state than when no VVA is confirmed, as shown by the scores resulting from the EQ5D3L and EQ—visual analog scale (Table 3), although no statistical significance was reached. Among the 5 domains of problems in the EQ5D3L questionnaire, no significant differences were observed depending on the confirmation of VVA. In case of the DIVA, where a higher score means greater impact of vaginal symptoms, women whose VVA was confirmed by their physician had statistically no differences in their score compared with those in whom VVA was not confirmed, except for the “self-concept and body image” dimension ( $P < .05$ ).

Compared with those patients with VVA not confirmed, the difference in the sexual function was significantly different between sexually active patients ( $n = 717$ ) with VVA confirmed vs no VVA confirmed for the overall FSFI score ( $20.1 \pm 7.4$  vs  $23.3 \pm 9.6$ ;  $P < .05$ ) and for the FSFI particular components of arousal ( $P < .05$ ), lubrication ( $P < .01$ ), satisfaction ( $P < .05$ ), and pain ( $P < .0005$ ) (see Figure 2). Significant differences were also seen between Spanish, sexually active women with VVA confirmed and not confirmed in the overall FSDS-R score ( $12.0 \pm 12.7$  vs  $7.6 \pm 10.3$ ;  $P < .05$ ) but not for the percentage of patients with severe FSDS-R score ( $\geq 11$ ) (41.9% vs 31.9%;  $P = .202$ ).

## DISCUSSION

The results of the current Spanish cohort analysis of the EVES study show that the overall prevalence of VVA, confirmed by gynecologic assessment in postmenopausal women from Spain who visited a gynecology or menopause clinic for any reason, is high (87%). This is in line with the prevalence detected by the recent Atrophy of the vagina in women in post-menopause in Italy (AGATA) study in women with a similar sociodemographic profile from Italy, in which 64.7% of women at 1 year and 84.2% at 6 years after menopause had developed VVA.<sup>21</sup> The condition affects postmenopausal women in southern European countries and demonstrates the need to adequately assess the effect of VVA symptomatology on quality of life and sexual function through the use of a well-established and verified set of instruments.

In Spain, postmenopausal women with VVA symptoms experienced a median of  $> 5$  symptoms. Some of the more recently published studies reported that the prevalence of symptoms of VVA were between 40–63% in postmenopausal women from Western countries,<sup>6,22–24</sup> as well as in Asia.<sup>25</sup> A longitudinal study reported that 47% women who were at least 3 years postmenopausal reported vaginal dryness as compared with

**Table 2.** Prevalence of symptoms referred by the patients

	With $\geq 1$ VVA symptom and VVA assessment (n = 1,094)	With $\geq 1$ VVA symptom and VVA assessment (n = 1,094)		
		No-VVA confirmed (n = 66)	VVA confirmed n = 1,028)	P
Vaginal dryness	90.8%	75.8%	91.7%	.000
Pain during intercourse	72.2%	59.1%	73.1%	.014
Pain during exercise	20.4%	1.5%	21.6%	.000
Bleeding during/after intercourse	17.5%	3.0%	18.4%	.001
Burning or irritation	63.3%	43.9%	64.6%	.001
Itching	59.9%	39.4%	61.2%	.000
Vaginal Discharge	26.0%	13.6%	26.8%	.018
Urinary incontinence	34.3%	31.8%	34.4%	.664
Urinary urgency	36.2%	31.8%	36.5%	.445
Urinary frequency	46.5%	24.2%	48.0%	.000
Dysuria	14.4%	19.7%	14.0%	.201
Recurrent urinary tract infections	18.8%	16.7%	19.0%	.643
Postcoital cystitis	15.2%	4.5%	15.9%	.013
Abdominal pain	24.2%	22.7%	24.3%	.770

VVA = vulvovaginal atrophy.

**Table 3.** Comparison of questionnaires between VVA confirmed and VVA not confirmed

	With $\geq 1$ VVA symptom and VVA assessment (N = 1,094)	No-VVA confirmed (N = 66)	VVA confirmed (N = 1,028)	P*
EuroQoL-EQ5D3L, mean $\pm$ SD (median)	0.875 $\pm$ 0.177 (0.914)	0.891 $\pm$ 0.173 (0.914)	0.874 $\pm$ 0.177 (0.914)	.473
Health status (EQ VAS), mean $\pm$ SD (median)	74.1 $\pm$ 16.2 (75)	76.4 $\pm$ 18.1 (80)	74.0 $\pm$ 10.0 (75)	.254
DIVA total, mean $\pm$ SD (median)	0.902 $\pm$ 0.618 (0.842)	0.842 $\pm$ 0.613 (0.782)	0.906 $\pm$ 0.619 (0.849)	.415
FSFI total, mean $\pm$ SD (median)	15.7 $\pm$ 9.8 (17.1)	19.4 $\pm$ 11.1 (22.6)	15.5 $\pm$ 9.6 (17.0)	.001
FSDS-R total, mean $\pm$ SD (median)	11.2 $\pm$ 13.1 (6.0)	9.0 $\pm$ 11.4 (4.5)	11.4 $\pm$ 13.1 (6.0)	.156
Female sexual dysfunction (FSDS-R $\geq 11$ )	38.7%	36.4%	38.8%	.692
Severity of symptoms <sup>†</sup>				
Vaginal symptoms total score, mean $\pm$ SD (median)	6.8 $\pm$ 4.4 (6)	4.6 $\pm$ 3.8 (4)	6.9 $\pm$ 4.4 (6)	.000
Vulvar symptoms total score, mean $\pm$ SD (median)	3.6 $\pm$ 2.6 (3)	2.6 $\pm$ 2.5 (2)	3.6 $\pm$ 2.6 (3)	.003
Urinary symptoms total score, mean $\pm$ SD (median)	2.9 $\pm$ 2.9 (2)	2.5 $\pm$ 2.8 (2)	2.9 $\pm$ 2.9 (2)	.301
All symptoms total score, mean $\pm$ SD (median)	13.6 $\pm$ 8.1 (12)	10.1 $\pm$ 7.6 (8)	13.8 $\pm$ 8.1 (12)	.000

DIVA = Day-to-Day Impact of Vaginal Aging; EQ VAS = visual analog scale; EQ5D3L = EuroQoL; FSDS-R = Female Sexual Distress Scale-revised; FSFI = Female Sexual Function Index; VVA = vulvovaginal atrophy.

\*No-VVA vs VVA confirmed comparisons.

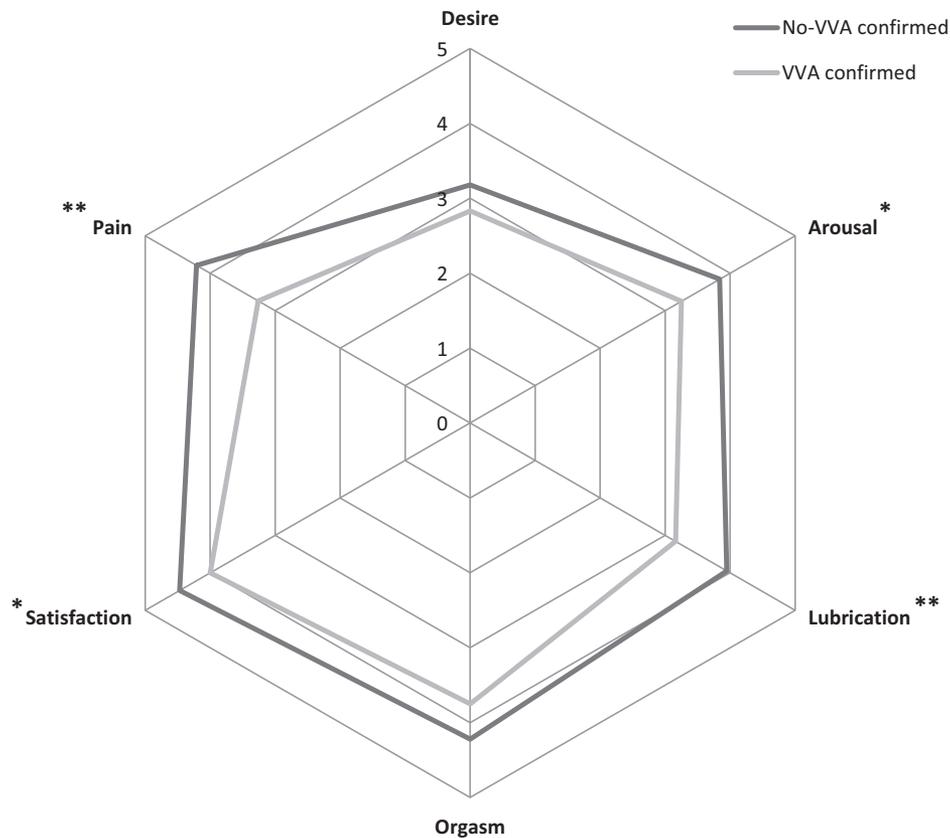
<sup>†</sup>The VVA-related complaints were grouped in 3 main types of symptoms as follows: Vaginal symptoms included vaginal dryness (inside), pain during intercourse (inside), pain during intercourse at penetration, bleeding during intercourse, bleeding during sexual contact, burning or irritation (inside), itching (inside), and vaginal discharge. Vulvar symptoms included vaginal dryness (outside), burning or irritation (outside), itching (outside), and pain during exercise. Urinary symptoms included urinary incontinence, urinary urgency, urinary frequency, urinary difficulties, recurrent urinary tract infections, and postcoital cystitis. In addition abdominal pain was recorded as an independent symptom.

4% and 21% in early and late perimenopausal women, respectively.<sup>26,27</sup> Our Spanish results, in line with the overall EVES study,<sup>12</sup> show that the prevalence of VVA symptoms in postmenopausal women visiting a gynecology/menopause clinic is clearly higher than those numbers observed in population cohorts and that vaginal dryness, pain during intercourse, and burning may be extremely burdensome symptoms.

According to previous overall results,<sup>12</sup> our data in Spain support that an objective physical examination for gynecologic VVA confirmation under routine clinical practice is of preeminent importance as shown by their significant relationship with sexual function and quality of life scores.  $>5\%$  of Spanish postmenopausal women with VVA symptoms had no VVA confirmed by a physician, either because VVA symptoms can be experienced even before the observed evidence of VVA signs<sup>28</sup> or due to other causes. Thus, it has been reported the effects of cognitive and emotional factors (ie, depression, anxiety) contributing to the presence of early VVA symptomatology.<sup>29,30</sup> Both a thorough history, as well as a gynecologic examination, should clarify whether reasons other than postmenopausal VVA are the cause of the symptoms that may require further investigation and possibly different treatment options or whether early symptoms of VVA should be treated to prevent further escalation of symptoms and other complications.

For the first time, the VVA diagnosis confirmation is evaluated and performed as part of an observational VVA study in Spain and has previously been included in another study conducted in Italy.<sup>21</sup> The AGATA study included 930 women and showed that 79% of them had a diagnosis of VVA under objective clinical examination. The AGATA study reported that signs and symptoms of VVA do not show a strong correlation with each other<sup>31</sup> and that satisfaction with current treatments needs to be improved.<sup>32</sup> Overall, the Spanish branch of the EVES study indicated that more than two-thirds of postmenopausal women attending gynecology or menopause centers acknowledge the presence of  $\geq 1$  chronic concurrent disease, highlighting hypertension and hypercholesterolemia. When evaluating the presence or absence of confirmed VVA, anxiety seemed to be the most prevalent chronic disease in women without a confirmed diagnosis of VVA. This statement is in agreement with the fact that some VVA symptoms appear even before the VVA objective diagnosis has been done; anxiety or depression processes may precede the existence of a confirmatory objective VVA diagnostic.<sup>29</sup>

Severity of VVA symptoms were also related with the confirmation of VVA diagnosis, mainly for vaginal and vulvar symptoms, which scored higher severities when women were diagnosed with VVA signs, demonstrating a delayed VVA



Radar chart presentation of No-VVA confirmed women (dark grey) compared to VVA confirmed women (light grey) for domains of the FSFI score in sexually active postmenopausal women. The values along the each axis of the radar chart are connected linearly to visualize the data set as a polygon. The perimeter of each polygon represents the mean value for each variable.

\*  $P < 0.05$ ; \*\*  $P < 0.005$

**Figure 2.** Domains of the FSFI score in the subpopulation of sexually active Spanish women. FSFI = Female Sexual Function Index.

confirmation in relation to symptom harshness. The results in our Spanish cohort showed that an objective gynecologic diagnosis of VVA in postmenopausal women is linked with worse vaginal health as measured by the mean Vaginal Health Index. In a similar trend, our data showed that severe vulvar atrophy is absent in women without VVA confirmed but highly prevalent when the VVA condition is certainly confirmed.

In relation with the sexual function, the current Spanish results evidenced that female sexual function measured by the FSFI was significantly influenced by the VVA diagnosis confirmation, mainly on components related to sexual arousal, lubrication, orgasm, and pain. The vulvar and vaginal symptoms were already acknowledged by women as factors affecting sexual activities in the REVIVE (REal Women's VIEWS of Treatment Options for Menopausal Vaginal ChangEs) study.<sup>10,11,13</sup> This trend may be interpreted as a confirmation of the Study of Women's Health Across the Nation that showed that women reporting vaginal dryness were more likely to also report dyspareunia and lower arousal sexual dysfunction.<sup>33</sup> Additionally, it also supports the

observation that sexual dysfunction almost doubles with advanced menopause status.<sup>34</sup> In line with this, our data confirm the idea that sexual activities are affected by VVA symptoms, because we found an influence of the objective VVA confirmation over sexual-related components (ie, sexual arousal or orgasm, among others).

Regarding the VVA impact on quality of life in Spanish postmenopausal women, the questionnaires used in this study allow the evaluation from 2 approaches: the general 1 (EQ5D3L) and the 1 specific for vaginal aging (DIVA). No significant link of VVA diagnosis confirmed by gynecologic examination with quality of life was observed, whereas the evaluation of the specific DIVA instrument showed a significant worse "self-concept and body image" dimension after the VVA objective diagnosis. Probably, the global aspect of the EQ5D3L measure makes it difficult to find a direct relationship between VVA diagnosis and quality of life, because VVA probably affects the quality of life components more as related to sexual life. Some reports have already observed that women from Southern European countries were more worried about the impact of vaginal discomfort on

long-term effects of their relationship because it directly avoids sexual intimacy.<sup>35</sup>

Some strengths and weaknesses need to be addressed before we conclude this discussion. In comparison with most of the surveys previously published that were performed in a telephone or online environment, the current study combined a face-to-face appointment for the completion of the questionnaires, with the objective physical examination that is a cornerstone of the diagnosis of VVA. The face-to-face experience provide some advantages over other data collection methods, such an increase in self-disclosure, the capture of non-verbal aspects that may affect the quality of a response, as well as the maintenance of the focus of participants' attention.<sup>36</sup> On the other hand, weaknesses include the lack of a control group, the unbalanced sample sizes in some subgroup comparisons, and the possible selection bias due to the fact that many women with VVA do not seek medical help.

## CONCLUSIONS

In conclusion, both VVA signs and symptoms are highly prevalent in Spanish postmenopausal women attending gynecology/menopause clinics, although the objective VVA diagnosis shows that 5% of women complaining about VVA symptoms have no signs of VVA. The evaluation of sexual function and quality of life demonstrates that VVA is associated with impaired sexual function in postmenopausal women. The early recognition of VVA in midlife medical practice should be promoted in Spain to allow the exclusion of other reasons for VVA-related symptoms and to effectively treat women before the appearance of advanced VVA signs with its associated complications. This approach may benefit the sexual aspects of quality of life in women and their partners by enhancing sexual health.

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