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Original article

Prevalence and quality-of-life burden of vasomotor symptoms associated with menopause: A European cross-sectional survey

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ABSTRACT

Objectives: To determine, in a European cohort, the prevalence and health-related quality-of-life (QOL) burden of moderate-to-severe vasomotor symptoms (VMS) in postmenopausal women, and among subgroups of women not taking hormone therapy (HT).
Study design: Screening surveys were sent to a random sample of women aged 40–65 years; those meeting the inclusion criteria completed the full questionnaire. Women with successfully treated VMS or breast cancer or who were receiving HT for medical conditions were excluded.
Main outcome measures: Frequency and duration of VMS, perceptions of menopause, seeking advice from a healthcare professional, treatment for VMS symptoms, perceptions of HT use, out-of-pocket costs, and other approaches to coping with menopause. The Menopause-Specific QOL (MENQOL) questionnaire and Work Productivity and Activity Impairment (WPAI) questionnaire were included.
Results: Of 11,452 women who completed the screening survey, 5178 were postmenopausal and 2035 completed the full questionnaire. Prevalence of moderate-to-severe VMS ranged from 31 % in France to 52 % in Italy. The majority were in the HT-caution or HT-averse group, despite being eligible for HT. Most common menopausal symptoms reported in the MENQOL were "feeling tired or worn out," with aching in muscles and joints reported as the most common symptom in Spain. Weight gain was the most bothersome symptom in all countries, except for Spain, where low backache was more bothersome. Hot flashes and night sweats had a greater impact on daily than on working activities, as measured by the WPAI.
Conclusions: A high proportion of European women reported experiencing moderate-to-severe VMS, with associated symptoms influencing QOL.

1. Introduction

The most frequent symptoms experienced during menopause include hot flashes (HF) and/or sweats, collectively known as vasomotor symptoms (VMS) [1,2]. Up to 80 % of women experience HF during menopausal transition [3–5]. VMS are considered the most bothersome symptom owing to their random onset [6].

Previous studies report that most women rate VMS as moderate-to-severe. They can persist for up to 10 years [3,7], they commonly result in treatment seeking [8], and may indicate general vulnerability to chronic conditions related to menopausal hormonal changes [9]. Regardless of the frequency/severity of HF, they are associated with

Abbreviations: GP, general practitioner; HCP, healthcare professional; HRQOL, health-related quality of life; HT, hormone therapy; MENQOL, Menopause-Specific Quality of Life; NR, not reported; OTC, over the counter; QOL, quality of life; SD, standard deviation; VMS, vasomotor symptoms; WPAI, Work Productivity and Activity Impairment.

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Table 1
Baseline participant characteristics.

Characteristic	France n = 406	Germany n = 405	Italy n = 413	Spain n = 406	UK n = 405
Age, mean, years	56	57	57	55	57
Age group, %					
40–50 years	11	10	11	16	9
51–60 years	68	67	65	73	63
61–65 years	21	23	24	12	28
Marital status, %					
Never married	12	11	10	9	11
Not married, living with partner	12	11	9	10	14
Married	53	53	65	61	57
Divorced/separated	20	21	13	15	15
Widowed	3	4	3	4	3
Other	0	0	0	1	0
Employed, %	59	60	48	63	53
Education, %					
University/Doctorate	38	15	25	46	33
Middle/high school	62	81	75	50	66
Elementary	0	5	1	3	1
Severity of VMS symptoms, %					
Mild	6	3	8	10	18
Moderate	87	83	23	83	78
Severe	14	19	74	21	30
HF and/or night sweats experienced in past 12 months, %					
HF only	24	20	23	23	20
Night sweats only	16	15	8	17	16
Both HF and night sweats	60	54	69	60	64
Smoker, %	29	44	38	36	21
Relative with breast cancer, %	17	13	18	16	17
Top 4 medical conditions, %					
High cholesterol or triglycerides	13	18	34	36	19
Migraine	20	16	22	25	24
Uterine myoma	7	19	16	17	10
Diabetes	5	10	4	7	12

HF, hot flash; VMS, vasomotor symptoms.

poor sleep and depressed mood [3], resulting in fatigue, irritability, forgetfulness, and decreased work productivity [2]. Consequently, menopausal symptoms substantially impact health-related quality of life (HRQOL) [6,10].

Prior research has identified geographical and racial/ethnic differences in menopausal symptom severity and duration [4,5]; in an intercontinental review, the proportions reporting VMS were 77 % (Africa), 18 % (South America), 46 % (North America), 58 % (Australia), and 58 % (Asia) [11]. A systematic review showed that there may be genetic variation in VMS [12]. The European menopause study of >4000 postmenopausal women reported that all experienced menopausal symptoms; 63 % rating them as severe. Rates were highest in the UK [13].

We undertook a survey of postmenopausal women aged 40–65 years in Europe, the USA, and Japan; the primary objective was to determine prevalence of moderate-to-severe VMS and impact on HRQOL, including subgroups not receiving hormone therapy (HT).

Findings from the global population showed that prevalence of moderate-to-severe VMS was higher in Europe (40 %) than the USA (34 %); both were higher than Japan (16 %) [14]. Here, we report data from the European cohort (France, Germany, Italy, Spain, and the UK).

2. Methods

2.1. Study design

Postmenopausal women experiencing moderate-to-severe VMS, or who reported having symptoms in the prior 12 months, were invited to participate in a cross-sectional online survey, conducted between December 2019 and February 2020. VMS severity was defined on the basis of the 2003 US Food and Drug Administration Guidance for Industry [15], the same definition used by the European Medicines Agency [16]: mild VMS is defined as "a sensation of heat without sweating," moderate "a sensation of heat with sweating, able to continue activity," and severe "a sensation of heat with sweating, causing cessation of activity."

Table 2
Prevalence of moderate-to-severe VMS among women aged 40–65 years.[a]

	France	Germany	Italy	Spain	UK
Estimated prevalence of moderate-to-severe VMS in country/region, %	31	36	52	41	40
Prevalence by HT group, %[b]					
HT-willing[c]	26	20	18	35	22
HT-averse[d]	53	61	64	50	53
HT-contraindicated[e]	11	15	13	11	11
HT-stoppers[f]	9	9	7	9	12
HT-caution[g]	64	72	74	75	66

HT, hormone therapy; VMS, vasomotor symptoms.

[a] Percentages estimated on the basis of respondents' self-assessment and perceptions.

[b] Groups are not mutually exclusive. Self-reported comorbidities do not indicate severity levels, associated treatments, etc.

[c] HT-willing: women currently prescribed HT or bioidentical "natural" hormone or who are willing to take HT.

[d] HT-averse: women who are NOT currently being treated with hormonal prescription therapies or prescribed bioidentical "natural" hormones and who are NOT willing to take HT.

[e] HT-contraindicated: women who have been assessed by a physician and HT was deemed not appropriate owing to certain conditions/circumstances (bleeding from the genital tract without a determined cause, acute liver failure/active liver disease, deep vein thrombosis, uterine cancer, ovarian cancer, heart attack/stroke/angina/myocardial infarction [20]).

[f] HT-stoppers: women who previously received hormonal prescription therapies or prescribed bioidentical "natural" hormones but are NOT currently receiving treatment.

[g] HT-caution: women with underlying medical conditions (e.g., smoking, first-degree relative with breast cancer, high cholesterol or triglycerides, migraine, diabetes) that warrant cardiovascular or breast cancer risk assessments before prescribing HT (adapted from Manson et al. [21]).

2.2. Assessments

An online screening survey, available on personal electronic devices, was sent by the Lightspeed consumer panel to a random sample of women aged 40–65 years in France, Germany, Italy, Spain, and the UK. The screening survey included six questions on age, current menstrual status, previous diagnosis of breast cancer, treatments in the past 12 months (including HT), menopausal symptoms, and whether participants had experienced mild/moderate/severe VMS. Those experiencing none/only mild VMS symptoms were not sent the full questionnaire. Those successfully treated for VMS or with no residual VMS were ineligible.

The full questionnaire was sent to those meeting inclusion criteria: postmenopausal (without periods for ≥12 months); at least one VMS symptom in the past 12 months (selected at least HF or night sweats from the menopausal symptom list in the screening survey); experienced moderate-to-severe VMS symptoms in the past 12 months; never diagnosed with breast cancer; not treated with antiestrogens, aromatase inhibitors, or gonadotropin-releasing treatments in the past 12 months. Ethics committee exemption was sought and granted for the market research involved in the study. Women received a small financial incentive for participating.

The full questionnaire included 37 questions on medical conditions, frequency and duration of VMS, perceptions of menopause, seeking advice from a healthcare professional (HCP) for management of

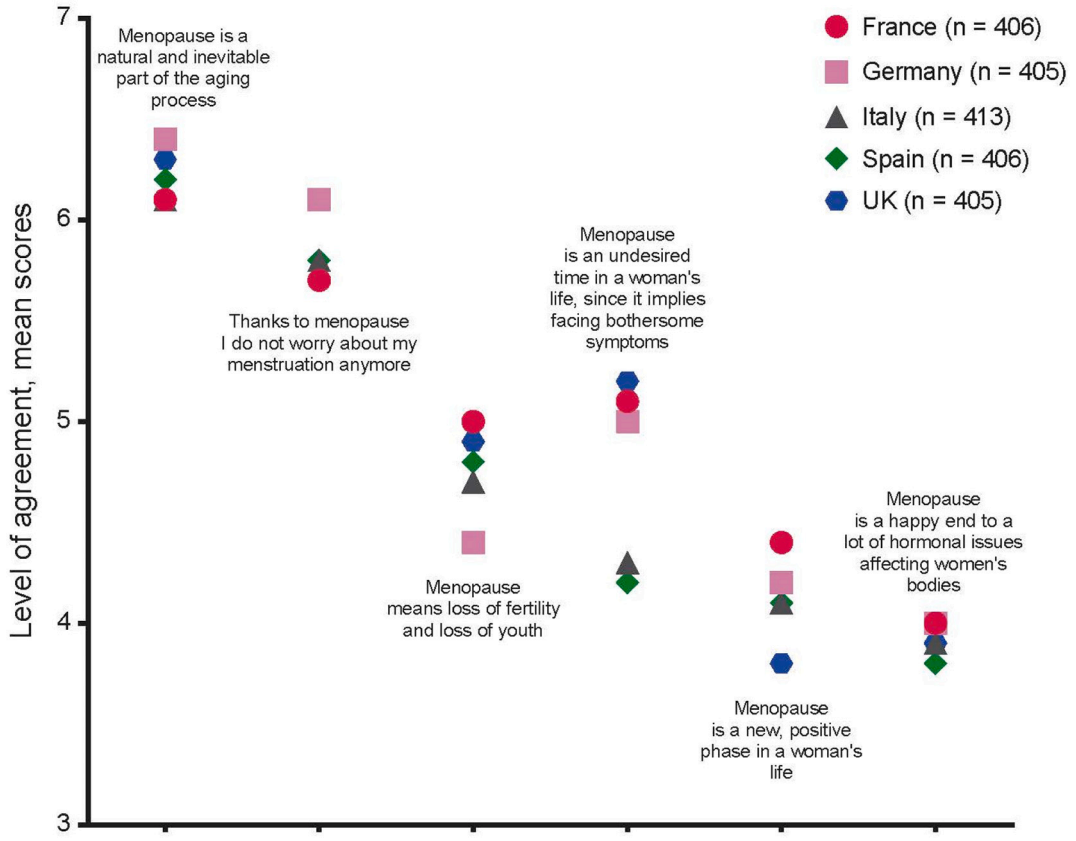

Fig. 1. Participants' opinions about the menopause. Data from responses to the question "Regarding statements related to possible opinions about the impact of the menopause, please indicate your personal level of agreement or disagreement using a 7-point scale, where 1 means 'I strongly disagree' and 7 means 'I strongly agree.'"

menopausal symptoms, treatment for VMS, perceptions of HT use, out-of-pocket costs, and other approaches to coping with menopause.

The Menopause-Specific QOL (MENQOL) questionnaire [17] was included to assess HRQOL and impact of menopausal symptoms. Participants noted whether they experienced any of 30 common menopausal symptoms in the past week, indicating degree of symptom bother on a scale of 1 ("not at all bothered") to 6 ("extremely bothered"). The Work Productivity and Activity Impairment (WPAI) questionnaire [18] was included to assess the level of impact of menopausal symptoms (including HF or night sweats) on working or daily activities. Participants indicated the impact of each symptom on a scale of 0 ("had no effect") to 10 ("completely prevented me from working or daily activities").

2.3. Calculation for prevalence of VMS

Detailed statistics from the study (Supplementary Fig. 1), plus data from public sources [19], were used to calculate the prevalence of postmenopausal women with moderate-to-severe VMS:

Prevalence was determined overall and in the following subpopulations (not mutually exclusive): (i) HT-willing, women currently prescribed HT or bioidentical HT, or willing to take HT; (ii) HT-averse, women NOT currently treated with hormonal prescription therapies or prescribed bioidentical hormones, and NOT willing to take HT; (iii) HT-contraindicated, women for whom HT was deemed inappropriate, as assessed by a physician, owing to certain conditions/circumstances (bleeding from genital tract without determined cause, acute liver failure/active liver disease, deep vein thrombosis, uterine cancer, ovarian cancer, heart attack/stroke/angina/myocardial infarction [20]); (iv) HT-stoppers, women who previously received hormonal prescription therapies or prescribed bioidentical "natural" hormones, but are NOT currently receiving treatment; and (v) HT-caution, women with underlying medical conditions (e.g., smoking, first-degree relative with breast cancer, high cholesterol or triglycerides, migraine, diabetes) warranting cardiovascular or breast cancer risk assessments before prescribing HT (adapted from Manson et al. [21]).

$$\text{Prevalence} = \text{Women (N) meeting the criteria of age 40–65 years, menopausal stage (postmenopausal), and moderate – to – severe VMS, who completed the main survey} \div \text{Women (N) aged 40–65 years completing the screening survey who classified themselves as postmenopausal (i.e., "after menopause, without periods for} \geq 12 \text{ months"}).$$

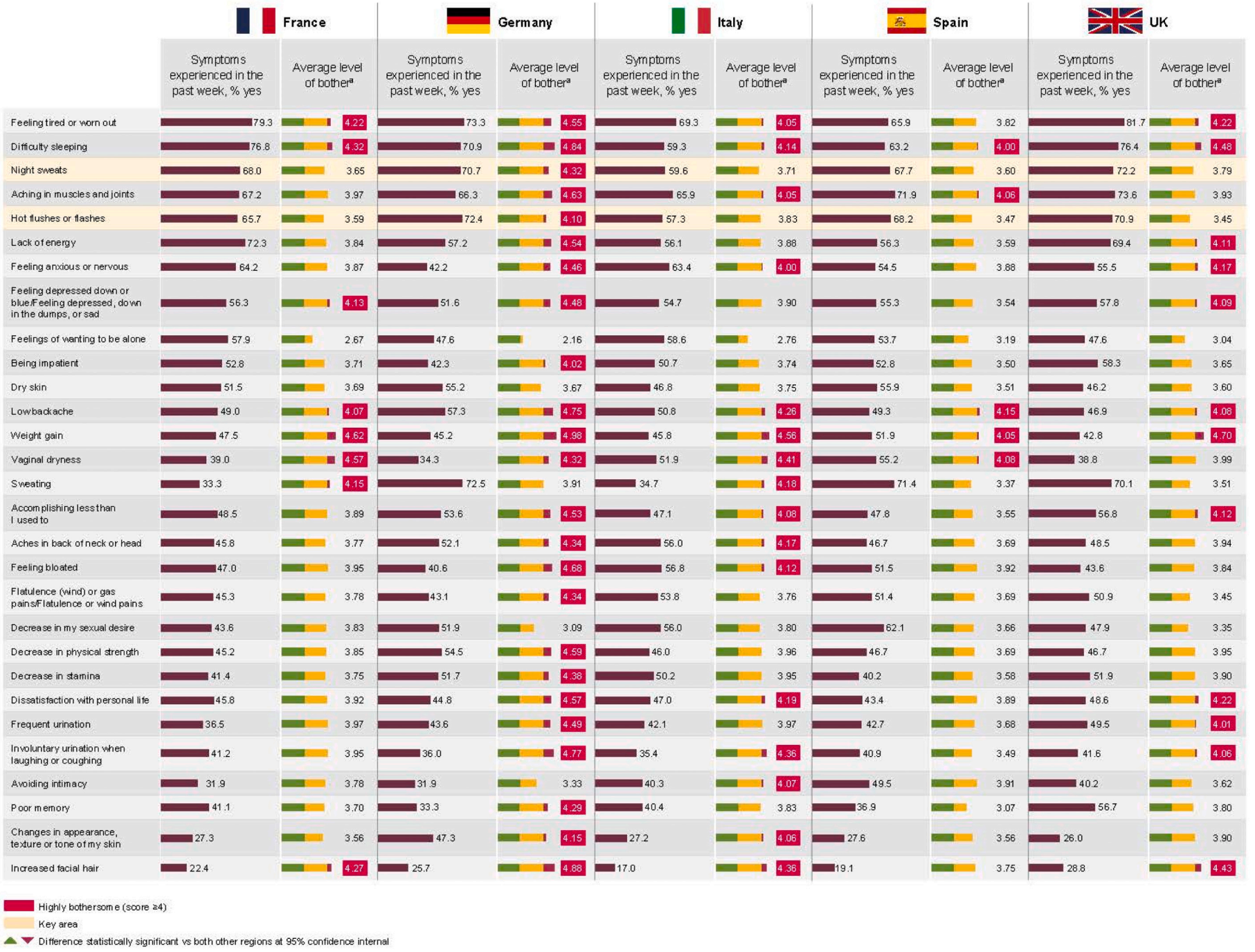

Fig. 2. Menopausal symptoms experienced in the past week by participants, and associated level of bother for each symptom using the Menopause-Specific Quality of Life questionnaire. Ordered from most frequent to least frequent symptom across all five countries. [a]0 = not bothersome; 6 = extremely bothersome.

Table 3
Women experiencing hot flushes/flashes or night sweats, or both conditions.

	France	Germany	Italy	Spain	UK
Average times/day (SD)	4.3 (3.1)	4.8 (3.6)	4.7 (3.7)	4.6 (3.4)	5.5 (3.4)
Mild VMS	1.8 (2.1)	1.7 (2.6)	2.2 (2.8)	1.9 (2.6)	1.8 (2.3)
Moderate or severe VMS	2.6 (2.9)	3.3 (3.3)	2.8 (3.0)	2.9 (3.2)	2.8 (2.9)
Average duration of each episode (SD), minutes	18 (41)	25 (56)	23 (91)	19 (60)	30 (91)

SD, standard deviation; VMS, vasomotor symptoms.

2.4. Statistical analysis

As in the global population, continuous variables were summarized descriptively including number of respondents, mean, standard deviation, median, minimum, and maximum [14]. Categorical data were summarized by frequencies and percentages. Percentages by categories were based on the number of respondents with no missing data, such that the percentages for the nonmissing categories totaled 100 %.

3. Results

3.1. Characteristics of participants

In total, 45,000 women were sent the screening survey (Supplementary Fig. 2); of 11,452 completers, 5178 were postmenopausal and received the full questionnaire. A total of 2035 women completed the full questionnaire (France, 406; Germany, 405; Italy, 413; Spain, 406; UK, 405). Most were aged 51–60 years, with employment ranging from to 48 % (Italy) to 60 % (Germany) (Table 1). Most common concurrent medical conditions were high cholesterol/triglycerides (highest incidence in Spain, 36 %), migraine (Spain, 25 %), uterine myoma (Germany, 19 %), and diabetes (UK, 12 %). The proportion of smokers ranged from 21 % (UK) to 44 % (Germany). In France, Germany, Spain, and the UK, the majority had experienced moderate VMS in the past 12 months (78–87 %); in Italy, the proportion with moderate VMS was 28 %, and severe VMS was predominant (74 %). In the previous 12 months, those experiencing HF and night sweats ranged from 54 % (Germany) to 69 % (Italy).

3.2. Prevalence of moderate-to-severe VMS

Prevalence ranged from 31 % (France) to 52 % (Italy). The majority of women were in the HT-caution group (notably in Spain) or the HT-averse group (notably in Italy), despite being HT-eligible (Table 2). The top four medical conditions and risk factors in the HT-caution group were migraine (highest incidence in Spain, 25 %), high cholesterol or triglycerides (Spain, 48 %), uterine myoma (Germany, 21 %), and diabetes (UK, 19 %).

3.3. Perception of bother associated with VMS

Although perception of bother differed between countries, there was an overall acceptance of menopause as a natural process, positively associated with cessation of menstruation (Fig. 1). According to the MENQOL, "Feeling tired or worn out" was the most common symptom experienced in the past week in most countries, with "Aching in muscles and joints" the most common symptom in Spain (Fig. 2). Difficulty sleeping was also common. Other symptoms frequently reported were HF, sweating, and night sweats. Weight gain was the most bothersome symptom overall, except Spain, where low backache was considered most bothersome. On average, women experienced 4.6 HF and/or night sweats per day, of any severity (Table 3). More women experienced moderate or severe HF and/or night sweats (average of 2.9/day and 2.6/day, respectively) than mild (average of 1.9/day and 1.5/day, respectively).

3.4. Impact of menopausal symptoms on work productivity and daily activities

According to the WPAI, HF/night sweats had a greater impact on daily activities (e.g., work around the house, shopping, childcare, exercising, studying) than on working activities (Fig. 3). However, impact of VMS on work productivity or daily activities was generally low. This trend was amplified when data were filtered by women with sleep disturbances.

3.5. Advice sought

The proportion of women who contacted an HCP in the previous 12 months to discuss HF/night sweats varied by country: UK, 27 %; Germany, 56 %; France, 57 %; Spain, 58 %; and Italy, 64 %. Reasons for not contacting an HCP included the perception that HF/night sweats were temporary and not-very-bothersome natural symptoms that might disappear if untreated and, in Germany and Italy, aversion to drug treatment. In all countries, general practitioners (GPs) were contacted more frequently in the last 12 months than gynecologists/menopause specialists; however, gynecologists/menopause specialists were considered the main advice source.

3.6. Treatment for menopause-related symptoms

Significantly more women in Italy and Spain were currently using/had used supplements and drugs without prescription than other women in Europe (Table 4). In the UK, significantly more women were currently (10 %) or had been prescribed (16 %) HT than the European population.

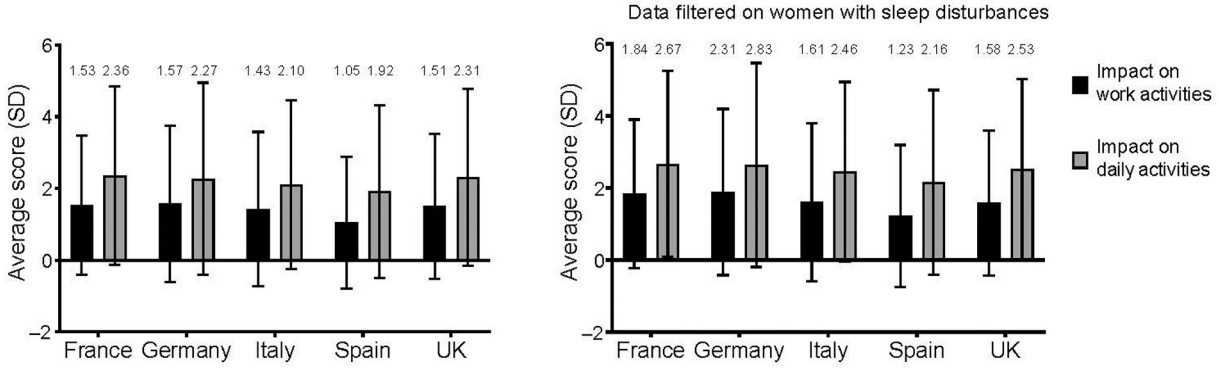

Fig. 3. Results from the Work Productivity and Activity Impairment questionnaire: impact on work activities and daily activities (average score).
A score of 0 indicates "had no effect" and 10 indicates "completely prevented me from working or daily activities".

Table 4
Treatment for menopause-related symptoms and reasons participants had never received HT.[a]

%	France n = 406	Germany n = 405	Italy n = 413	Spain n = 406	UK n = 405
Currently taking supplements and drugs without prescription[a]	11	12	29	20	11
Had taken supplements and drugs without prescription[a]	11	15	33	25	13
Currently taking HT[a]	6	8	8	4	10
Had taken HT previously[a]	12	12	10	11	16
Never taken HT[b]	82	82	85	87	78
HT-averse	67	76	78	59	70
Willing to receive HT in the future	33	24	22	42	30
Reasons for never having taken HT[b]					
No need to treat menopause with drugs since it will pass by itself	46	54	52	52	55
Worried about side effects of HT	27	38	25	21	32
Worried about long-term risks associated with HT	26	29	17	19	31
Risk factors in the family	14	11	8	11	11
Lack of information about HT	12	6	7	6	5
HT was discussed with HCP but was not advised due to an underlying condition(s) that places me at higher risk if HT is taken	7	5	7	3	5
Discussed with HCP but was not advised due to underlying conditions	6	5	7	3	4

HT, hormone replacement therapy; HCP, healthcare professional.

[a] Responses to the question "Are you currently receiving any treatment for the menopause-related symptoms?"

[b] Responses to the question "You have never received hormonal treatment for your menopause-related symptoms. Is this due to…" and "Would you consider taking hormones (hormone replacement therapy or HT; e.g., estrogen therapy, progestin therapy) for your menopause-related HF/night sweats if this was advised/prescribed to you by an HCP?" Percentages estimated on the basis of respondents' self-assessments and perceptions.

In addition, compared with other European countries in which the gynecologist/menopause specialists are the reference HCPs for HT, GPs are the reference HCPs in the UK.

Between 78 % (UK) and 87 % (Spain) of participants had never received HT. Of those not previously receiving HT, a high proportion were HT-averse; the highest proportion was in Italy (78 %). The main reason for not receiving HT was the belief that menopause will pass by itself. Other reasons included worries about HT side effects and long-term risks associated with HT, lack of information about HT, and risk factors in the family. The proportion of women who were willing to receive HT in the future ranged from 22 % (Italy) to 42 % (Spain).

3.7. Other approaches to coping with menopausal symptoms

Most women (75 %) had implemented lifestyle changes to cope with their menopausal symptoms (Fig. 4), with the lowest proportion in France (66 %) and highest in Italy and Spain (79 %). There were country-specific differences in activities performed. Overall, over half of participants in each country reported some improvement in their HF/night sweats after implementing lifestyle changes. Between 27 % (Italy) and 49 % (UK) reported no change in symptoms.

3.8. Use of over-the-counter (OTC) products

Between 37 % and 52 % of participants treated their HF/night sweats with OTC products (France, 40 %; Germany, 45 %; Italy, 52 %; Spain, 49 %; UK, 37 %). These included vitamins D and E, soy products, calcium, sage, evening primrose oil, sleep aids, black cohosh, ginkgo biloba, St. John's wort, starflower oil, agnus-castus, and traditional Chinese medicine. Approximately half the women in each country perceived some symptom improvement when using OTC products, except the UK, where 64 % of women reported no symptom changes.

3.9. Out-of-pocket costs

Doctor consultation/visits incurred highest out-of-pocket monthly costs of treating menopause-related symptoms (Table 5); ≥65 % of postmenopausal women reported needing to monitor prices when purchasing.

4. Discussion

Findings from this survey demonstrate that prevalence of moderate-to-severe VMS among postmenopausal women aged 40–65 years is relatively high (40 %) in the five European countries studied, with highest prevalence in Italy (52 %) and lowest in France (31 %). Overall, prevalence in European countries was higher than the USA (34 %) and Japan (16 %) [14]. Other studies have reported similar findings; a study of postmenopausal women in the same five European countries reported that 50 % experienced either mild (25 %), moderate (18 %), or severe (8 %) VMS, and that these symptoms were associated with humanistic and economic outcomes [22]. A telephone survey in these five countries plus Switzerland found that the most frequent menopausal symptoms were VMS (52 %), sleeplessness (44 %), irritability (37 %), mood swings (37 %), and reduced sex drive (35 %) [23]. An Italian study found that almost 87 % of women experienced ≥3 simultaneous VMS, with the most bothersome being HF (41 %), night sweats (31 %), and overheating (31 %) [24]. Another Italian survey reported the most frequent menopausal symptoms as VMS (38 %), sleep disorders (38 %), weight gain (36 %), mood disturbance (33 %), and arthralgia (32 %) [25]. In the international Vaginal Health survey, the most frequent symptoms in 3520 postmenopausal women were VMS (72 %), night sweats (66 %), disrupted sleep (54 %), and weight gain (52 %) [26].

Strengths of our study include the large number of respondents and real-world nature of the study. Because this survey was population-based, it included many women who might not have sought medical opinion because their symptoms were not sufficiently bothersome. Limitations include potential bias, as women needed to be proactive to be involved in the study, and exclusion from receiving the full questionnaire. In our study, a wide range of psychological and physical symptoms of VMS were reported, with the most common being "feeling tired and worn out" among 66–82 % of respondents, although "aching in muscles and joints" was the most common symptom in Spain. HF and night sweats were also frequently reported, although they were only considered moderately bothersome in most countries (except Germany). However, women who suffered from HF and night sweats reported this as more bothersome than either symptom alone. The most bothersome symptom was weight gain in most European countries, but low backache was most bothersome in Spain. In the global survey [14], weight gain was considered highly bothersome in Europe (level of bother, 4.57) and the USA (4.80), and moderately bothersome in Japan (3.86) [14]. Low backache was considered more bothersome in Europe (4.28) than reported previously for the USA (4.07) and Japan (3.66) [14]. In the Italian survey, VMS were the most bothersome (43 %), followed by vaginal dryness/itchiness (21 %), sleep disorders (19 %), and urinary infections/incontinence (17 %) [25]. We believe that different concerns reflect cultural aspects more than a real ethnic/racial difference within European countries. However, literature does suggest differences in the frequency and severity of VMS based on race, for example, Black women experience greater frequency and severity of VMS compared to White women [27,28].

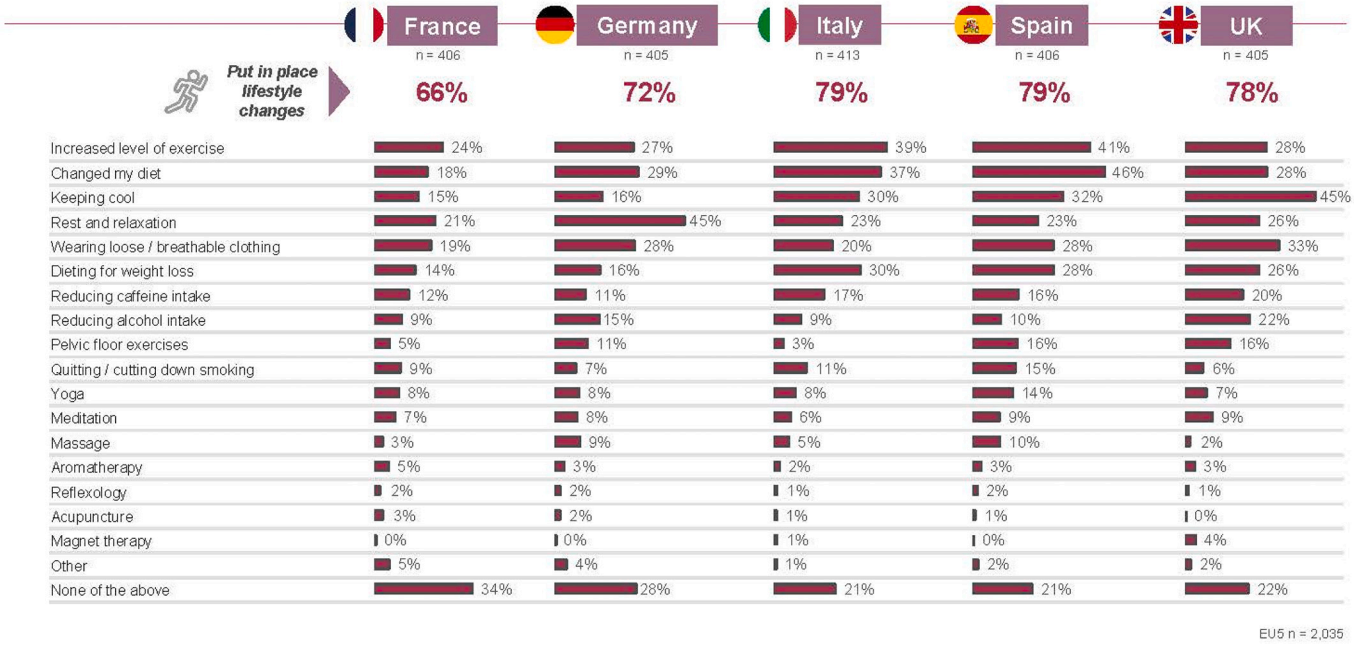

Fig. 4. Lifestyle approaches to coping with menopause-related symptoms.

Table 5
Out-of-pocket costs (€) for treatment of menopause-related symptoms.

Costs, €	France	Germany	Italy	Spain	UK
Prescription drugs	6.7	10.5	15.1	6.6	5.8
OTC drugs	6.5	11.9	15.6	11.0	4.1
Supplements/alternative medicine	8.0	22.7	53.4	32.1	8.8
Doctor consultation/visits	23.6	5.4	81.1	28.2	1.4
Laboratory examination/tests	6.6	7.4	65.3	7.7	0.0

OTC, over the counter.

Difficulty sleeping was also considered one of the most bothersome symptoms in the European populations (this was similar for the USA in the global survey [14] and the US Study of Women's Health Across the Nation, with highest prevalence in the Caucasian population [29,30]). In the global survey, difficulty sleeping was considered to be only moderately bothersome in Japan [14].

Although menopause was accepted as inevitable and a natural phase of life with the benefit of cessation of menstruation, it was also linked with some negative feelings, such as the loss of fertility and youth, and onset of bothersome symptoms. In the 2021 Italian survey, 44 % of women considered that menopause significantly changed their sexual life owing to the consequences of physical modifications (33 %) or psychological reasons (11 %). Only 4 % of the women accepted menopause as a favorable period to avoid pregnancies [25]. In this study, the impact of night sweats and HF was greater on daily than working activities. In the current study, opinions about menopause and the aspects scoring high and low in terms of level of agreement were consistent across countries. However, there were some individual differences in the level of agreement by country and this could be attributed to disparity in health education and public awareness.

Of those women who reported moderate-to-severe VMS in the European cohort, many were in the HT-caution or HT-averse subgroups, despite being eligible for HT; this is unsurprising, as those with adequate VMS management and who were potentially receiving HT were excluded from this analysis. Of women never treated with HT, about half considered menopause a transitory condition that would pass untreated. Other prominent reasons for never receiving HT treatment included "worried about side effects of HT" and "worried about long-term risks associated with HT".

In the past two decades, the use of HT has declined following publication of data from the Women's Health Initiative study, which highlighted an unfavorable benefit-risk profile for HT [31–33]. More recent publications provided some reassurance, and HT is currently recognized as the most effective treatment for VMS in symptomatic women aged <60 years and within 10 years of menopause [34,35]. The proportion of women currently prescribed HT or who had taken HT for menopause-related symptoms was relatively low; highest use was in the UK. This may be owing to accessibility (UK women can receive HT from their GP, whereas in other European countries, women receive HT from menopause specialists). Furthermore, in the UK, National Institute for Health and Care Excellence guidelines are constantly updated to reflect current management strategies for VMS, ensuring HT prescription for those in need [36]. Reluctance to receive treatment for VMS was reported in an Italian study [24]; although 92 % of women had prior knowledge of VMS, only 12 % acted promptly after experiencing symptoms. Furthermore, ~43 % were not treating their VMS symptoms [24]. These findings suggest that further management guidance is needed in Europe, as well as newer treatment options.

Overall, over half the women in each country reported some improvement in HF/night sweats after implementing lifestyle changes, although up to 49 % reported no symptom change. Approximately half the women in each country perceived symptom improvement with OTC product use, except UK women, where 64 % reported no change in symptoms. However, according to the North American Menopause Society's position statement on nonhormonal management of menopause [37], use of OTC supplements and herbal therapies and certain lifestyle modifications (e.g., cooling techniques, avoidance of "triggers") may delay appropriate and timely management of VMS. Doctor consultations/visits incurred highest out-of-pocket monthly costs of treating menopause-related symptoms, although there were between-country differences owing to differences in healthcare systems; for example, UK women do not need to pay for HCP visits.

5. Conclusions

A high proportion of postmenopausal women in Europe experienced moderate-to-severe VMS; severity was greatest among Italian and lowest

among French women. Because not all those experiencing moderate-to-severe VMS seek healthcare advice, the true impact is likely to be underestimated when assessing only women diagnosed with VMS in a healthcare setting. Moreover, the associated consequences, including effects on sleep and weight gain, have significant impacts on HRQOL and risk factors for chronic conditions. Psychological and physical symptoms of VMS were reported; the most common was "feeling tired and worn out". Only a small proportion were treated for menopausal symptoms, with highest numbers in the UK. For those who are suitable and willing to receive HT, easy access to HT and reimbursement of menopausal treatment in healthcare systems may improve outcomes. For those who are reluctant or unsuitable for HT treatment for VMS, availability of alternative and effective nonhormonal prescription treatment options may help improve management of VMS.

Contributors

Rossella E. Nappi contributed to the interpretation of data, and drafting and revision of the paper for important intellectual content.

Emad Siddiqui contributed to conception and design, the collection of data, the interpretation of data, and drafting and revision of the paper for important intellectual content.

Lora Todorova contributed to the interpretation of data, and drafting and revision of the paper for important intellectual content.

Carol Rea contributed to conception and design, the collection of data, the interpretation of data, and drafting and revision of the paper for important intellectual content.

Eric Gemmen contributed to the collection of data, the interpretation of data, and drafting and revision of the paper for important intellectual content.

Neil M. Schultz contributed to the interpretation of data, and drafting and revision of the paper for important intellectual content.

All authors approved the final version of the manuscript.

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Ethical approval

Ethics committee exemption was sought and granted for the market research involved in the study.

Provenance and peer review

This article was not commissioned and was externally peer reviewed.

Research data (data sharing and collaboration)

There are no linked research data sets for this paper. Researchers may request access to anonymized participant-level data, trial-level data, and protocols from Astellas-sponsored clinical trials at www.clinicalstudydatarequest.com. For the Astellas criteria on data sharing see: https://clinicalstudydatarequest.com/Study-Sponsors/Study-Sponsors-Astellas.aspx.

Declaration of competing interest

Rossella E. Nappi had past financial relationships (lecturer, member of advisory boards, and/or consultant) with Boehringer Ingelheim, Eli Lilly, Endoceutics, Gedeon Richter, HRA Pharma, Merck Sharpe & Dohme, Palatin, Procter & Gamble, Teva Women's Health, and Zambon. At present, she has ongoing relationships with Abbott, Astellas, Bayer, Exeltis, Fidia, Novo Nordisk, Organon, Pfizer, Shionogi, and Theramex. She serves as General Secretary Elected of the International Menopause Society. Emad Siddiqui, Lora Todorova, and Neil M. Schultz are employees of Astellas. Carol Rea and Eric Gemmen declare that they have no competing interests.

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Appendix A. Supplementary data

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