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Original article

# Persistent gap in menopause care 20 years after the WHI: a population-based study of menopause-related symptoms and their management

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ABSTRACT

*Objectives:* To assess the current management of menopause in France with regard to menopause-related and genitourinary symptoms, with a focus on use of menopause hormone therapy (MHT).
*Design, setting, and participants:* The ELISA Study is a population-based survey of 5004 French representative women aged 50 to 65 years. From July to August 2020, the participating women answered an online computer-assisted web interview on menopause-related and genitourinary symptoms and their management, including use of MHT.
*Main outcomes and measures:* Prevalence of menopause-related and genitourinary symptoms in postmenopausal women. Management of these symptoms, including the reasons for not doing so, management by health care providers, and use of MHT.
*Results:* Among the 5004 selected women, 4041 whose postmenopausal status was confirmed were included in the final analyses. Of the untreated 3685 women, 87 % reported at least 1 menopausal symptom, with a significantly higher percentage of symptomatic women in the 50–54 age group (92 %, $p < 0.05$) than in the other two age groups (55–59 years: 89 % and 60–64 years: 82 %). 68 % of the surveyed women experienced on average 2.5 symptoms of the genitourinary syndrome of menopause (GSM). Using a visual analogue scale (VAS) from 0 (no impact) to 10 (high impact) to evaluate the impact of menopausal/GSM symptoms on their quality of life, mean VAS score was 5.9 (SD: 2.2), with 25 % of the women aged 55–59 years rating their quality of life between 8 and 10. 61 % of the surveyed women reported being regularly followed by a health care professional. 44 % of women reported never having discussed their menopausal/GSM symptoms with a health care provider. The main reasons were because menopause is “a normal part of women's lives”, because it was not “necessary to do so”, or their symptoms were “not serious enough”. Only 242 women (6 %) were current MHT users, of whom 49 % were using estrogen-alone therapy and 71 % were using transdermal estrogens. Fear of hormones (35 %) and MHT side-effects (25 %) were the main reasons given for not using MHT. 62 % of the women reported that the decision not to take MHT was supported by their physician.
*Conclusions and relevance:* This large population-based survey confirmed not only the high prevalence of menopause-related and GSM symptoms in postmenopausal women within the first 10–15 years after menopause, but also the very low percentage of MHT users in France. Twenty years after the publication of the initial Women's Health Initiative (WHI) results, management of postmenopausal women is still characterized by unmet

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needs in menopausal care. Therefore, there is a strong need to educate the public and health care providers about menopause-related problems and possible solutions, including MHT, through dedicated educational programs.

## 1. Introduction

Menopause is a physiologic event defined by the loss of ovarian follicular function and the final menstruation period. This results in a significant drop in estrogen secretion, the consequences of which for quality of life and related health risks vary greatly from one woman to another. Bothersome climacteric symptoms are very frequent, both throughout the menopause transition and within the first postmenopausal years. The most emblematic of these are hot flushes and night sweats [1], but sleep and mood disturbances are also frequently reported, as well as joint pain or symptoms of the genitourinary syndrome of menopause (GSM). The prevalence of these symptoms and their burden on quality of life varies among postmenopausal women, but symptoms can still be present several years after menopause onset [2–4]. There are also large variations in symptom prevalence between countries, with a much higher frequency in America and Europe compared to Asia [5–7].

Menopause hormone treatment (MHT) is widely acknowledged as the most effective therapy for relieving the symptoms of menopause. In the early 2000s, up to 50 % of postmenopausal women in the US and several European countries may have taken MHT at some point. The main reasons were to improve their quality of life and to prevent osteoporosis or other health issues related to estrogen deficiency, but limiting the aging process was also often promoted to justify MHT use. The publication of the Women's Health Initiative (WHI) results in 2002 [8] caused a seismic change in the management of menopause, with prescription of MHT falling by up to 80 % in some countries [9–13]. Although the WHI remains the only large, long-term randomized controlled trial of postmenopausal women using MHT, it has been argued that the characteristics of the study limit the generalizability of the findings to all postmenopausal women. Accordingly, international menopause society statements now indicate that MHT is associated with a positive benefit-risk balance in early postmenopausal women within the first 10 years after menopause or below the age of 60 years [14–18]. Nevertheless, 20 years after the WHI, use of MHT remains very low in most US and European countries. This is particularly true in France, although there is uncertainty on the percentage of postmenopausal women who are currently being treated with MHT. This raises questions about the management of menopause and whether there are unmet needs in menopausal care.

Therefore, we conducted a national survey in 5004 women aged 50 to 65 years, which aimed to assess the current management of menopause with regards to menopausal and GSM symptoms, with a focus on MHT use.

## 2. Material and methods

### 2.1. Population

Based on the INSEE demographic data of the overall population of French women aged 50 to 65 years, the quota methodology was applied based on the following parameters: age, region, market size, and professional status to ensure that the survey population was representative of the national population of women aged 50 to 65 years. A selected sample of 28,790 French women was then contacted to participate via an invitation e-mail presenting the topic of the survey within an access panel of consumers. 22,512 women never responded to the survey invitation. 504 women did not fully complete the questionnaire and 770 women were excluded to respect the quota methodology used to establish the representativeness of the sample. This left 5004 women aged 50 to 65 years, representative of the French population of women in terms of age distribution by 5-year age range, geographical origin, occupation and size of their habitat who were included in the ELISA (Etude sur Le parcours médIcal des femmeS après la ménopAuse) survey. They were considered postmenopausal if they had not menstruated during the previous 12 months. Women who reported irregular bleeding in the previous 12 months, or who were <55 years and were taking hormonal contraceptives of any type at the time of the survey, were considered perimenopausal or of undetermined menopausal status.

### 2.2. Methods

The 5004 women included were interviewed online using a computer assisted web interview (CAWI) methodology between July 17th and August 6th 2020. All eligible women gave their agreement to participate the survey by completing the participation agreement form in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR).

The questionnaire was composed of 7 screening criteria questions and of 43 declarative questions. The questionnaire included only closed questions with different response options: single answer questions, multiple answers questions, numeric answers questions (scales from [1 to 10/10]). The questionnaire was divided into 4 sections: identification of menopause symptoms, experience of menopause symptoms, diagnosis and management of menopause, and treatments for menopause symptoms. To identify the menopausal status of women, the questions related to their menstrual period were focused on the last 12 months.

## 3. Statistical analyses

To correct for the non-response rate, which introduces bias in the data when the respondents and non-respondents do not have the same behavior for the parameters of interest, we used the raking ratio method. The weighting of the final sample was done using the following variables: age (3 brackets: 50–54/55–59/60–65 years), region (13 French metropolitan regions), market size (5 brackets), and professional status (8 brackets), based on sociodemographic data gathered by the INSEE institution in France. Bilateral comparison tests of means, variances and response frequencies were carried out when the sizes of the populations tested were greater than or equal to 30 at the 5 % threshold. The comparison of the means was carried out using a *Z*-test or a "paired" Z-test, depending on whether the populations tested were paired or not. The comparisons of variances and standard deviation were carried out only for independent populations, using a File-Snedecor test.

## 4. Results

Of the 5004 women who were selected, 286 women (6 %) reported having menstrual periods in the previous 12 months, and menopausal status could not be reliably confirmed in 677 women (13 %) who were aged <55 years and were taking hormonal contraception. In addition, 114 women (2.8 %) who were likely to be menopausal based on an age of >55 years but who were still taking hormonal contraception were not considered. This left 4041 postmenopausal women who were included in the ELISA survey, of whom 427 (10.6 %) were taking any type of menopause treatment and 242 (6.2 %) were taking MHT (Fig. 1). The sociodemographic structure of the 4041 postmenopausal women was not different from the initial nationally representative sample of 5004 women aged 50 to 65 years, except for a slightly older age profile as we excluded perimenopausal women and women under 55 taking a contraception. The mean age of the final menstruation period (FMP) was 50.2 ± 4.8 years, with 92 women (2.3 %) a FMP before the age of 40

years and 337 (8.3 %) a FMP after the age of 55 years.

### 4.1. Frequency of menopause-related and GSM symptoms of menopause

Of the untreated 3685 postmenopausal women, 87 % (n = 3189) reported at least 1 menopausal symptom, with a significantly higher percentage of symptomatic women in the 50–54 age group (93 %, $p < 0.05$) than in the other two age groups (55–59 years: 89 % and 60–64 years: 82 %) (Table 1). The average number of reported bothersome symptoms was significantly greater in the 50–54 age group (5.9) and the 55–59 age group (5.6) than in the 60–64 age group (4.4; $p < 0.05$). Weight gain, sleep disturbances/insomnia and fatigue were the most common symptoms, each reported by >50 % of women. The percentage of women reporting hot flushes, night sweats and sleep disturbances/insomnia was significantly higher in the 50–54 age group than in the other 2 age groups (Table 1).

The mean duration of the symptoms in women experiencing both hot flushes, night sweats and sleep disturbances was 3.1 years in the 50–54 age group, 4.7 years in the 55–59 age group and 8.4 years in the 60–65 age group ($p < 0,05$).

We found that 68 % of the surveyed women experienced on average 2.5 GSM symptoms with vaginal dryness (37 %), lack of lubrication during intercourse (35 %) and urinary urgency (29 %) being the most frequently reported. There was no significant difference in the frequency of reported GSM symptoms among the different age groups (Table 2).

Using a visual analogue scale (VAS) from 0 (no impact) to 10 (high impact), women were asked how much their quality of life was impacted by their menopausal/GSM symptoms. The mean VAS score was 5.9 (SD: 2.2) with greater scores reported in both the 50–54 and 55–59 age groups compared to the 60–65 age group ($p < 0.05$). The highest score was reported in the 55–59 age group, with 24 % of the women rating the impact of menopausal/GSM symptoms on quality of life between 8 and 10 (Table 3).

**Table 1**
Prevalence of menopause-related symptoms among the 3 postmenopausal age groups.

| Symptoms | 50–54 years n = 745 | 55–59 years n = 1295 | 60–65 years n = 1645 |
|---|---|---|---|
| Vasomotor symptoms | 59 % | 48 %$ | 31 %* |
| Sleep disturbances/insomnia | 61 % | 56 %$ | 46 %* |
| Fatigue/lack of energy | 61 % | 57 % | 43 %* |
| Night sweats | 47 % | 42 %$ | 26 %* |
| Muscle and joint pain | 52 % | 53 % | 44 %* |
| Lack of sexual desire/low libido | 48 % | 50 % | 42 %* |
| Weight gain | 58 % | 57 % | 52 %* |
| Mood disorders | 40 % | 37 % | 27 %* |
| Memory loss | 33 % | 34 % | 25 %* |
| Headaches | 28 % | 24 %$ | 16 %* |
| Skin dryness | 35 % | 37 % | 38 % |
| Hair loss | 24 % | 21 % | 19 %$ |
| Increased hair growth | 14 % | 15 % | 13 % |

* $p < 0.01$ vs 54 years and 55–59 years.
$ $p < 0.01$ vs 50–54 years.

### 4.2. Management of menopausal and GSM symptoms by health care providers

Sixty-one percent of the surveyed women reported being regularly followed by either a general practitioner (GP) (32 % of women) or a gynecologist (27 %) and 2 % by another health professional, while 39 % of them reported not being followed by any health care provider. 44 % of the surveyed women reported never having discussed their menopausal/GSM symptoms with a health care provider. This percentage was comparable among the 3 age groups (50–54 years: 45 %, 55–59 years: 42 %, 60–65 years: 46 %). The underlying reasons are shown in Table 4. Of the women who did not discuss their symptoms with a health care provider, 43 % considered them to be “a normal part of women's lives”, 38 % did not feel “necessary to do so”, and about 30 % felt that their symptoms were “not serious enough”. Of the 1779 women who discussed their menopausal/GSM symptoms with a health professional, 48 % did so

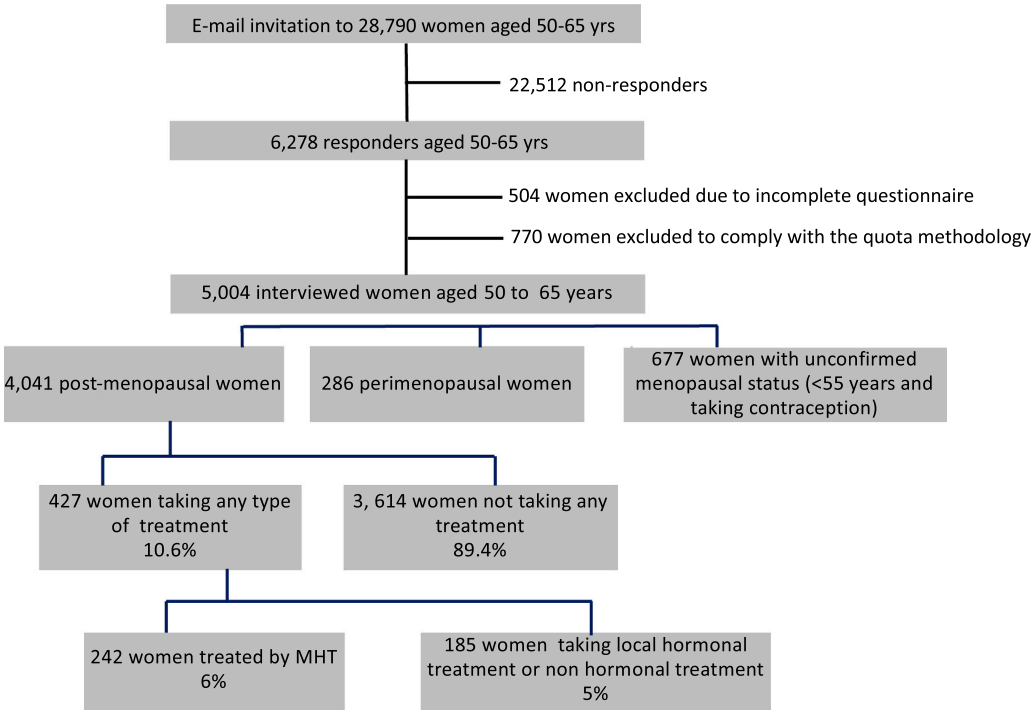


**Fig. 1.** Flowchart of the study population: based on the INSEE demographic data of the overall population of French women aged 50 to 65 years, the quota methodology was applied to select a representative sample of 28,790 French women aged 50 to 65 years (see methods). They were contacted to participate via an e-mail invitation presenting the topic of the survey within an access panel of consumers.

**Table 2**
Prevalence of GSM symptoms among the 3 postmenopausal age groups.

| GSM symptoms | 50–54 years n = 745 | 55–59 years n = 1295 | 60–65 years n = 1645 |
|---|---|---|---|
| Vaginal dryness | 34 % | 37 % | 38 % |
| Decreased lubrification with sexual activity | 35 % | 36 % | 35 % |
| Disconfort or pain with sexual activity | 27 % | 27 % | 36 % |
| Decreased arousal, orgasm, desire | 24 % | 28 % | 26 % |
| Itching of vulvar or vagina | 15 % | 13 % | 12 % |
| Irritation/burning of vulvar or vagina | 10 % | 11 % | 9 % |
| Urinary urgency | 24 % | 26 % | 23 % |
| Urinary frequency | 30 % | 30 % | 27 %* |
| Urinary leakage | 28 % | 28 % | 28 % |
| Dysuria | 8 % | 10 % | 9 % |

* $p < 0.01$ vs 50–54 years and 55–59 years.

**Table 3**
Impact of climacteric/GSM symptoms on quality of life using a visual analogic scale.

| VAS [0−10] | 50–54 years n = 690 | 55–59 years n = 1153 | 60–65 years n = 1346 |
|---|---|---|---|
| 0–4 | 18 % | 16 % | 20 %* |
| 5-7 | 48 % | 47 % | 46 % |
| 8–10 | 20 % | 24 %$ | 17 % |
| Non-response | 14 % | 13 % | 16 % |
| Mean ± SD | 5.9 ± 2.2 | 6.1 ± 2.1 | 5.7 ± 2.2* |

* $p < 0.01$ vs 55–59 years.
$ $p < 0.01$ vs 50–54 years and 60–65 years.

**Table 4**
Reported reasons for lack of communication about menopause-related symptoms with healthcare practitioners.

| | 50–54 years n = 308 | 55–59 years n = 488 | 60–65 years n = 613 |
|---|---|---|---|
| Normal symptoms of woman's life | 43 % | 44 % | 42 % |
| No feeling of need | 37 % | 38 % | 38 % |
| Being able to manage them | 28 % | 27 % | 31 % |
| Not serious enough | 28 % | 26 % | 29 % |
| Fear of hormonal treatments | 14 % | 11 % | 7 %* |
| Not aware that anything was wrong | 10 % | 7 % | 6 %$ |
| Shame | 7 % | 6 % | 7 % |
| No knowledge of healthcare practitioner | 6 % | 7 % | 6 % |
| Symptoms of short duration | 4 % | 7 % | 6 % |
| Others | 4 % | 3 % | 3 % |

* $p < 0.01$ vs 50–54 years and 55–59 years.
$ $p < 0.01$ vs 50–55 years.

with their GP and 46 % with their gynecologist. Using a visual analogue scale from 0 (very poor) to 10 (very good), a large majority of the women who were regularly followed by a health care provider indicated being satisfied with the management of their menopause, with 40 % rating this management between 8 and 10.

Among the 3189 symptomatic women, 593 (18.6 %) indicated that they were either currently taking (n = 185) or had taken (n = 408) treatments other than MHT (either oral or vaginal). Among the treatments that were currently being used, homeopathy was taken by 66 women (36 %), antidepressant or anxiolytic treatments by 26 (14 %) and 29 (16 %) women, respectively, and 8 (4 %) women reported taking either progesterone given alone or DHEA pills. Ninety-four women (50.8 %) reported using a vaginal treatment, with 46.8 % of them using moisturizers and 53.2 % using low dose vaginal estrogens.

### 4.3. Use of MHT

MHT was being used by 242 women (6 %), with similar numbers of treated women across the 3 age groups. Mean age at MHT initiation was 51.2 ± 5 years with a mean duration of treatment of 6.4 ± 6.1 years. The mean MHT durations were, by age group, 50–54: 3.6 ± 6 years (n = 80), 55–59: 5.7 ± 4.9 years (n = 76), and 60–65: 9.5 ± 5.9 years (n = 86). At the time of the survey, 81 % of the treated women reported using the same treatment since initiation. The large majority (71 %) were taking transdermal estrogens (percutaneous gel by 116 women and a transdermal patch by 24 women) and 29 % were taking oral estradiol. The remaining 44 women had taken multiple treatment regimens over time, including transdermal estrogen by 40 women either at some point during the course of their treatment or at the time of the survey. Forty-seven percent of the treated women declared taking estrogens alone (either transdermal or oral). Finally, 24 % of MHT users also reported using vaginal treatment (either with low-dose vaginal estradiol (67 %) or moisturizers (33 %)). There was no significant difference in socio-demographic data between the overall sample of women and women treated with MHT.

For the 2596 symptomatic women who had never been treated, the reasons for not taking MHT were as follows (Table 5): fear of hormones (35 %), fear of treatment side effects (25 %, with fear of breast cancer and cardiovascular disease being cited by 59 % and 61 % of those women, respectively), fear of weight gain (12 %), relatives report of MHT side effects (8 %), and other reasons (7 %). 1610 women reported that the decision not to take MHT was supported by their physician's opinion, who either did not discuss MHT (for 23 % of them), estimated that there was no need for MHT (24 %), or was against MHT (9 %) or not convinced about treatment efficacy (6 %).

## 5. Discussion

The results of this survey conducted in a large cohort of postmenopausal women aged 50–65 years and representative of the French population confirmed that most women in this age range experienced bothersome menopause-related symptoms. Our results are not surprising and consistent with the majority of studies which have evaluated the frequency of climacteric symptoms in postmenopausal women [19,20]. Their prevalence and especially that of vasomotor symptoms (VMS) is known to vary considerably by geographic region or among racial/ethnic groups with the highest prevalence reported in the USA and Europe and the lowest in Asia [5–7]. In a recent large online survey performed in 5 European countries, including France, the USA and

**Table 5**
Reasons for not taking MHT among postmenopausal women with at least 1 menopause-related symptom (n = 2596).

| | 50–54 years n = 590 | 55–59 years n = 944 | 60–65 years n = 1062 |
|---|---|---|---|
| Fear of hormonal treatments | 33 % | 36 % | 35 % |
| Fear of treatment side effects | 23 % | 25 % | 26 % |
| Fear of weight gain | 15 % | 11 %* | 11 %* |
| Health care professional's judgment of no need | 24 % | 21 % | 26 % |
| No proposal by health care professional | 27 % | 26 % | 20 %$ |
| Health care professional against MHT | 8 % | 10 % | 9 % |
| Health care professional not convinced about MHT interest | 5 % | 7 % | 6 % |
| Knowledge of relatives who did not tolerate MHT | 8 % | 8 % | 8 % |
| Advise by family not to take MHT | 5 % | 5 % | 4 % |
| Feeling of non-effectiveness of MHT | 3 % | 4 % | 5 % |
| Treatment too constraining | 2 % | 2 % | 2 % |

* $p < 0.01$ vs 50–54 years.
$ $p < 0.01$ vs 50–54 years and 55–59 years.

Japan, prevalence of moderate-to-severe VMS was reported in 31 % of the 406 French women aged 50–65 years surveyed [7]. In our study, the prevalence of VMS, regardless of severity, was much higher and reported by 58 % of women in the 50–54 age group, 48 % in the 55–60 age group and 31 % in the 60–65 age group. VMS, night sweats and sleep disturbances were the most frequent reported symptoms, and their prevalence peaked within the first 4–5 years following the last menstruation period. The frequency of these 3 symptoms was somewhat lower further from the onset of menopause, although of the women in the 60–65 years range, 46 % still reported having sleep disturbances, 31 % hot flushes and 26 %, night sweats. In recent years, several studies have documented the persistence of these symptoms over time after the menopause transition [2–4]. In the SWAN study [2], the median total VMS duration was 7.4 years, with VMS persisting a median of 4.5 years after the final menstruation period. There was a relationship between the time of onset and the mean duration of VMS, with women who experienced VMS early in the menopause transition having significantly longer VMS duration compared to those who were postmenopausal at onset (median of 9.4 years vs 3.4 years, $p < 0.01$). In our study, the mean duration of both VMS, night sweats and insomnia at the time of the survey was 8.4 years in the oldest age group, which is consistent with the SWAN study findings. In this group, sleep disturbances/insomnia were the most frequently reported bothersome symptoms by almost half of women, whereas about 1 in 4 reported still having VMS or night sweats. Impaired sleep quality after menopause is frequently related to hot flushes and night sweats [21–24], especially throughout the menopause transition, though prior studies have indicated that other reasons such as anxiety or mood disturbance/depression can also cause sleep problems [23]. GSM symptoms were declared by 30 to 40 % of the surveyed women, with the highest percentage in the oldest age group. This percentage is roughly similar to that reported by other studies. The latest systematic review of 27 studies [25] indicated that the prevalence of GSM-related symptoms ranged from 13 % to 87 %. Aging and years since the menopause are the factors more strongly associated with worsening of GSM symptoms [26]. Altogether, the impact of the menopausal/GSM symptoms on the quality of life appears to be significant. Using a visual analogue scale (VAS) from 0 (no impact) to 10 (high impact), 82 % of the women rated the impact of these symptoms on quality of life equal as being 5 or greater with >20 % of the women between 50 and 60 years rating this impact between 8 and 10. This raises the question of why nearly half of the women never discussed the management of their bothersome symptoms with their practitioner. Our survey indicates that many women considered menopause to be “a normal part of women's lives” which does not need to be addressed. Accordingly, 30 to 40 % of the women felt that their symptoms were “not serious enough” or that they did not need to be managed. This illustrates the common belief that menopause is a natural and inevitable event with aging [7,27]. This view has increased over the last 15 years, especially in industrialized countries, and reflects changes in people's attitudes towards MHT following the WHI. The WHI results indicating that MHT increased the risk of breast cancer, myocardial infarction, stroke and venous thromboembolism led to a huge drop in the use of hormone treatment. However, additional studies and further analyses of the WHI data have since shown that risks associated with MHT use are significantly modified by age, years since menopause, underlying health status, the way of estrogen administration and whether estrogen is used alone or in combination with a progestin. Accordingly, for women aged <60 years or who are within 10 years after menopause onset and have no contraindications, the benefit-risk balance of MHT is currently considered favorable for treatment of vasomotor symptoms, prevention of postmenopausal bone loss and reduction of fracture [15,17,18,28]. There is also growing evidence that MHT given in the early postmenopausal years may have a beneficial effect on reducing coronary heart disease and all-cause mortality [29], although further studies are still needed to confirm this potential benefit. Nevertheless, the primary findings of the WHI remain predominant in the minds of many women and practitioners, and remain the basis of most health agencies' positions on MHT. Moreover, it must be noted that about 40 % of the surveyed women declared not being regularly followed by a healthcare provider. This low percentage may be a consequence of medical demography changes in France, in particular the decrease over the last 10 years of the number of practitioners of “medical gynecology” which remains a separate specialization in France. Since the publication of the WHI results, training in menopause is no longer a routine part of medical school curricula or residency training [30]. These educational and knowledge gaps are likely to contribute limiting comprehensive care of climacteric symptoms, notably by MHT. Accordingly, in our survey >1 in 3 physicians did not address the issue of MHT, and, perhaps more problematically, 40 % considered treatment unnecessary or even dangerous. It is therefore not surprising that only 6 % of the women were using MHT which, given the latest French census data indicating that just over 7 million women are aged 50–65, would estimate the number of MHT-treated women at <500,000. Such drop in the use of MHT was observed in all industrialized countries where the prevalence of pre-WHI MHT use ranged from 20 to 45 %. The standardized prevalence of MHT users among French women aged 50–69 years was about 35.7 % (35.1–36.4) at the time of the WHI publication (November 2002–January 2003), that was about 2.5 million women and dropped by about 45 %, 40 % and 29 % in the 50–54, 55–55 and 60–65 years age groups, respectively within the first year following the WHI results release (November 2003–January 2004) [13]. The decrease in MHT sales was reported to be around 80 % within the 12–15 years following the WHI results publication which is concordant with the prevalence of MHT users found in our study of about 6 % in women aged 50–65 years. In the SWAN study, initiation of MHT dropped from 6.8 % pre-WHI to 2.8 % post-WHI with a corresponding decrease in MHT continuation [31]. Among 13,060 Norwegian women aged 45–75 years, only 9.6 % of them were using MHT with the higher percentage in the 55 to 64 age group [26]. In Germany, prevalence of systemic MHT prescriptions decreased by >60 % in women aged 55–65 and by >50 % in women aged 50 and 70 years old from 2004 to 2016 [32]. In a Japanese 10-year longitudinal survey performed after 2001 in about 8000 nurses, the lifetime prevalence of MHT was about 13 % with a median duration of use of 2 years [33]. If our results underline the lack of awareness of menopausal disorders and their management by MHT by health professionals, they also confirm that the fear of hormones together with the fear of treatment side effects remain for most women the main reasons not to use MHT. This agrees with an Australian survey [34] which highlighted the pervasive impact of media on public perceptions of risk [35] leading to a tendency of women to overestimate MHT harms and ignore its potential benefits. In our survey, it must be noted that almost 50 % of the current users were taking estrogen-alone therapy, which suggests that physicians might be less reluctant to consider treatment in hysterectomized women [32,33] given the differences in breast cancer risk between estrogens and estrogen-progestogen combinations [36].

Our study has several strengths and limitations. This is a large population-based survey of representative French women. We were very careful to restrict our analyses to only women whose postmenopausal status was certain, which led us to exclude those who were taking oral contraception at the time of the survey. To our knowledge, this is the first population-based study to examine the reality of medical management of climacteric symptoms almost 20 years after the publication of the WHI. It offers a view of women's current self-perception of their quality of life at menopause and the limits of their management. Several limitations also need to be acknowledged. It cannot be completely excluded that the women who agreed to respond may not be completely representative of all French women aged 50–65, even after various adjustments with respect to 5-year age distribution, geographic origin, occupation, and home size. It is thus possible that the women surveyed might have a different perception of their quality of life compared to the general population. Also, our results might not reflect the concerns of women in other countries with different cultures and ethnicities. We did

not have medical information, and therefore could not exclude women with MHT contraindications, such as breast cancer or thrombosis, which may have led us to underestimate the true prevalence of MHT use. However, their number is probably quite low and the risk of bias by this factor can be considered small. Because we did not know the exact reasons for taking MHT, we preferred to estimate the prevalence of MHT users as a percentage of the total population and not just of symptomatic women Also, our survey did not ask whether or not women had undergone hysterectomy, so we could not determine whether the prevalence of menopausal/GSM symptoms was influenced by prior hysterectomy or whether such a history could explain the relatively large number of estrogen-only users among treated women. Finally, because of the cross-sectional nature of this study, it was not possible to examine changes in quality of life throughout menopause, or with years since menopause for the oldest women. Nevertheless, our findings underline the persistent impact of menopause-related symptoms, since >1 in 2 women in the oldest age-group rated the impact on their quality of life on the analogic scale as being >5.

In conclusion, this large population-based survey confirmed the high prevalence of menopause-related symptoms in postmenopausal women within the first 10–15 years after menopause, and that the percentage of MHT users in France is very low. This is as much related to the fact that most women still consider menopause as a natural and inevitable part of aging as to the fact that many physicians do not consider the necessity of comprehensive management. The initial WHI findings have deeply modified the management of postmenopausal women, resulting in a significant increase in unmet needs for menopausal care. Twenty years after the WHI, there is a strong need to raise awareness and remove the stigma associated with the menopause, and to educate the public and health care providers about menopause-related health problems [37] and possible solutions, including MHT, through dedicated educational programs.

## Contributors

Florence A. Trémollieres contributed to the study concept and design, the data interpretation and critical revision of the manuscript, wrote the original draft and reviewed and edited the draft article.

Gabriel André contributed to the study concept and design, the data interpretation and critical revision of the manuscript.

Brigitte Letombe contributed to the study concept and design, the data interpretation and critical revision of the manuscript.

Luc Barthélemy participated in data collection and conducted the statistical analyses.

Amélie Pichard participated in data collection and conducted the statistical analyses.

Bertrand Gelas contributed to the study concept and design, the data interpretation and critical revision of the manuscript.

Patrice Lopès contributed to the study concept and design, the data interpretation and critical revision of the manuscript.

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## Ethical approval

All eligible women gave their agreement to participate the survey by completing the participation agreement form in accordance with the Data Protection Act and the General Data Protection Regulation (GDPR).

## 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. Data will be made available on request.

## Declaration of competing interest

Florence Trémollieres has received consulting fees in the past 3 years from Astellas, Exeltis, Gédeon-Richter, Theramex and Vichy.

Gabriel André has received consulting fees in the past 3 years from Besins Healthcare France, Exeltis, Gédéon-Richter, Mylan and Theramex.

Brigitte Letombe has received consulting fees in the past 3 years from Besins Healthcare France, Exeltis, Gédéon richter, Theramex, CCD, Serelys pharma, Biocodex, Astellas and Vichy.

Luc Barthélemy and Amélie Pichard are employees of Stethos which received research funding from Theramex for this study.

Bertrand Gelas is an employee of Theramex.

Patrice Lopès has received consulting fees in the past 3 years from AMS, Astellas, Bayer Healthcare, Effik, IPRAD, GSK, MSD, Pileje, Pfizer, Serelys Pharma, and Theramex.

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