

## Climacteric complaints in the community

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**Background.** At the onset of the climacteric, healthy middle-aged women present with a variety of complaints, especially in general practice. In these first years of entering the menopause, vaginal blood loss alters from irregular periods to complete amenorrhoea. According to these different menstrual patterns, we can distinguish a pre-, peri- and postmenopausal phase. It could be useful to know whether specific climacteric complaints are related to these different phases.

**Objective.** The aim of this study was to investigate the relationship between climacteric complaints and the menstrual pattern during the menopausal transition in a population-based cross-sectional survey of healthy middle-aged women.

**Methods.** All women aged 47–54 years, living in the city of Eindhoven, were invited to participate in the Eindhoven Osteoporosis Study (EPOS); 6648 (78%) agreed to participate. All women completed a questionnaire concerning climacteric complaints. Climacteric status was defined by menstrual history. Odds ratios (ORs) were obtained for the relationship between climacteric status and climacteric complaints. Multiple logistic regression analysis was carried out, with climacteric status as the dependent variable.

**Results.** Of the 27 items in the questionnaire concerning climacteric complaints, seven were significantly different between all three climacteric phases ( $P < 0.1$ ). After multiple logistic regression analysis, comparing peri- and premenopause, only flushing (OR 5.9) was significantly different. Between post- and perimenopause, seven symptoms appeared to be different: three urogenital complaints [vaginal dryness (OR 1.6), vaginal discharge (OR 0.4) and pain during intercourse (OR 1.9)], three vasomotor symptoms [daytime sweating (OR 1.4), night-time sweating (OR 0.7) and flushing (OR 1.9)] and, finally, insomnia (OR 1.3). When comparing post- and premenopause, flushing (OR 13.4), insomnia (OR 2.1) and depressed mood (OR 0.6) were significantly different, in addition to three urogenital symptoms: vaginal dryness (OR 2.6), vaginal discharge (OR 0.3) and pain during intercourse (OR 2.1).

**Conclusion.** The major findings of the study are that flushing is strongly associated with the transition from pre- to perimenopause, while urogenital complaints, daytime sweating and insomnia are more prominent in the transition from peri- to postmenopause.

**Keywords.** Climacteric, cross-sectional, epidemiology, menopause, population based.

### Introduction

In the assessment of climacteric complaints in perimenopausal women, the importance of delineating which

symptoms can be attributed to menopausal status has been stressed repeatedly. Seventy to eighty percent of women around the menopause have been reported to present with climacteric complaints,<sup>1</sup> which can be categorized as vasomotor, genito-urinary, neurological, psychosocial and musculoskeletal. Climacteric complaints are said to be typical when they concern vasomotor complaints such as flushing (night-time), sweating and atrophy of the urogenital epithelium, with vaginal dryness and pain during intercourse as a consequence. These typical complaints are considered to be related to climacteric hormonal changes. Although many hormone changes

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have been studied, none of these have been shown to have any predictive value for either the duration or the severity of symptoms and complaints.<sup>2,3</sup> Other factors which decrease oestrogen production, such as smoking, alcohol intake and low body mass index, are reported to be related to the occurrence of hot flushes at the time of menopause.<sup>4</sup> As far as atypical complaints are concerned, much obscurity and incomprehension still exists among women, GPs and other clinicians. This might be due to the fact that most research was based mainly on clinical trials carried out to investigate symptomatic relief subsequent to oestrogen therapy.<sup>5</sup> Moreover, most of the data were collected among women attending menopause clinics, which is a highly selected study population. Finally, most of the published data refer to samples in which the age range varied widely, which makes it difficult to define several complaints as being specific to menopausal transition. It would be of clinical relevance to know which complaints occur most frequently in this relatively short time span, and how specific they are, especially for the GP, who can be regarded as the main climacteric counsellor for healthy middle-aged women. For this purpose, it would be helpful to discriminate complaint patterns within the menopausal transition between the different phases generally defined as pre-, peri- and postmenopause. Therefore, we conducted a cross-sectional general population survey among Dutch Caucasian women.

## Methods

Between September 1994 and September 1995, all women ( $n = 8503$ ) born between 1941 and 1947 and living in the city of Eindhoven, The Netherlands, were invited to participate in a screening programme for osteoporosis, known as EPOS<sup>6</sup> (the Eindhoven Perimenopausal Osteoporosis Study). Of the 8503 women, 6846 (81%) responded to the invitation and 6648 (78%) agreed to participate in the study. This sample was screened by medical history, bone mineral density by DXA, and blood samples. All women completed a questionnaire at home. Of the women screened, 5896 were Dutch Caucasian. Non-Dutch Caucasian women ( $n = 734$ ) were excluded because of possible language problems.

To investigate the normal climacteric period and to have the possibility of assessing the current menstrual cycle, the following categories of women were excluded from the analysis: women who had had a hysterectomy (with or without oophorectomy) ( $n = 1117$ ); women who had had a bilateral oophorectomy ( $n = 11$ ); and users of oestrogens/progestagens ( $n = 1433$ ), 75.9% of whom had not had a hysterectomy and/or a bilateral oophorectomy.

A further 1622 women (27.5%) were excluded because of non-compliance with one or more items in the questionnaire. In this excluded group, age, climacteric status,

marital status and educational level were equally distributed compared with the original sample of Dutch Caucasian women. In total, 2450 completed questionnaires were available for analysis (Table 1).

Climacteric status was classified into three categories, based on the women's menstrual history:<sup>7</sup> premenopause, regular menstruation pattern; perimenopause, irregular menstrual cycle (at least one period in the last year); and postmenopause, amenorrhoea for 1 year prior to screening.

We used the validated questionnaire of Oldenhav and Jaszman<sup>8</sup> covering 24 complaints and added three items: vaginal dryness, pain during intercourse and waking at night.

The analysis was carried out using the Statistical Products and Service Solutions (SPSS). The severity of the complaints was indicated on a 4-point scale: absent, slight, moderate and severe. In order to compare the complaints, they were divided into absent (=0) and present (slight/moderate/severe) (=1). First the chi square test for independent samples was carried out to compare the frequency of occurrence of the complaints in the three categories of climacteric status using a two-sided significance level of  $P < 0.05$ . The complaints that showed differences at a univariate level with a  $P$ -value

TABLE 1 Characteristics of the samples of Dutch Caucasian women (47–53 years of age)

Mean age	Total sample $n = 5896$		Completed questionnaires $n = 2450$	
	$n$	%	$n$	%
	50.0 (SD = 2.1)		49.8 (SD = 2.1)	
Marital status				
Married	4503	76.4	1960	80.0
Unmarried	293	5.0	117	4.8
Widowed	914	15.5	318	13.0
Divorced	186	3.2	55	2.2
Menstrual status				
Premenopause			526	21.5
Perimenopause			1250	51.0
Postmenopause			674	27.5
Oestrogen use	1433	24.3		
Gynaecological status				
No operation	4768	80.4		
Hysterectomy	1117	18.9		
Bilateral oophorectomy	11	0.2		
Educational level				
Primary school	668	12.8	262	10.7
Lower professional educ.	1821	35.0	816	33.3
Sec. modern educ.	1379	26.5	671	27.4
Sec. professional educ.	306	5.9	152	6.2
High modern educ.	380	7.3	198	8.1
High professional educ.	562	10.8	309	12.6
Academic	83	1.6	42	1.7

<0.10 were entered into a multiple logistic regression analysis in order to obtain adjusted odds ratios (ORs, with 95% confidence intervals) for the relationship between climacteric status (dependent variable) and complaints (independent variables) during the menopausal transition. Adjusted ORs were estimated for each menopausal transition step: pre–peri, peri–post and overall, pre–post, respectively.

## Results

The frequency of the presented complaints, according to menopausal status, are set out in Table 2. In addition,

significant differences between the different phases are noted.

After backward stepwise multiple logistic regression analysis, we found, in the comparison between post- and premenopause, that six items were significantly different (Table 3). Four of these six items were significantly more prevalent in the postmenopausal group: vaginal dryness, pain during intercourse, flushing and insomnia. Vaginal discharge and depressed mood were present significantly less often in the postmenopausal group. When we compared peri- and premenopause, only one item proved to be significantly different: flushing, which was more prevalent in the perimenopause group (Table 3). Comparing postmenopausal with perimenopausal

TABLE 2 Frequency of 27 complaints at three different climacteric phases in 2450 Dutch Caucasian women, aged 47–53 years (chi square)

Complaints	Premenopause <i>n</i> = 526			Perimenopause <i>n</i> = 1250			Postmenopause <i>n</i> = 674		
	<i>n</i>	%	S <sup>1</sup>	<i>n</i>	%	S <sup>2</sup>	<i>n</i>	%	S <sup>3</sup>
Pins and needles	105	20	*	344	28	^	223	33	*
Dizziness	127	24	*	401	32	NS	219	33	*
Night-time sweating	136	26	*	631	51	^	388	58	*
Daytime sweating	105	20	*	556	45	*	400	59	*
Muscle pain	282	54	*	836	67	NS	469	70	*
Palpitations	132	25	*	422	34	NS	259	38	*
Vaginal dryness	104	20	*	366	29	*	305	45	*
Vaginal itching	109	21	NS	293	23	^	129	19	NS
Vaginal discharge	221	42	NS	589	47	*	200	30	*
Burning on micturation	38	7	NS	105	8	NS	73	11	*
Loss of urine	189	36	NS	491	39	NS	244	36	NS
Pain during intercourse	49	9	*	204	16	*	197	29	*
Tiredness	303	58	*	847	68	NS	457	68	^
Shortness of breath	132	25	*	423	34	NS	240	36	*
Flushing	63	12	*	607	49	*	445	66	*
Agitation	193	37	*	643	51	NS	385	57	*
Headache	266	51	NS	695	56	NS	351	52	NS
Tiredness on waking	247	47	^	680	54	NS	379	56	^
Irritability	252	48	*	732	59	NS	401	60	*
Forgetfulness	249	47	*	733	59	NS	414	61	*
Insomnia	195	37	*	592	47	*	402	60	*
Depressed mood	190	36	*	588	47	NS	309	46	*
Migraine	99	19	NS	257	21	NS	131	19	NS
Lack of energy	180	34	*	567	45	NS	304	45	*
Waking at night	324	62	^	899	72	NS	525	78	*
Restless legs	212	40	NS	550	44	NS	322	48	^
Lack of self-confidence	115	22	*	362	29	NS	222	33	*

S<sup>1</sup> = significantly different between pre- and perimenopause: ^  $P < 0.1$ , \*  $P < 0.05$ ; S<sup>2</sup> = significantly different between peri- and postmenopause: ^  $P < 0.1$ , \*  $P < 0.05$ ; S<sup>3</sup> = significantly different between pre- and postmenopause ^  $P < 0.1$ , \*  $P < 0.05$ ; NS = not significantly different.

TABLE 3 Multiple logistic regression analysis in 2450 Dutch Caucasian women—odds ratios (95% CI) dependent variable: climacteric status<sup>a</sup>

Complaints	Transition step		
	Pre–Peri <sup>b</sup>	Peri–Post <sup>c</sup>	Pre–Post <sup>d</sup>
Pins and needles	0.94 (0.70–1.27)	–	0.98 (0.66–1.44)
Dizziness	0.98 (0.73–1.31)	–	0.75 (0.50–1.10)
Night-time sweating	1.29 (0.96–1.73)	0.74 (0.57–0.98)	0.87 (0.57–1.35)
Daytime sweating	0.89 (0.63–1.26)	1.35 (1.01–1.83)	1.38 (0.87–2.18)
Muscle pain	1.25 (0.97–1.61)	–	1.24 (0.88–1.76)
Palpitations	0.88 (0.66–1.18)	–	1.00 (0.69–1.44)
Vaginal dryness	1.03 (0.76–1.40)	1.62 (1.27–2.07)	2.62 (1.78–3.84)
Vaginal itching	–	–	–
Vaginal discharge	–	0.35 (0.28–0.44)	0.28 (0.19–0.38)
Burning on micturation	–	–	0.70 (0.39–1.26)
Loss of urine	–	–	–
Pain during intercourse	1.36 (0.92–2.01)	1.86 (1.41–2.45)	2.13 (1.33–3.42)
Tiredness	1.01 (0.73–1.37)	–	1.07 (0.71–1.63)
Shortness of breath	1.05 (0.79–1.41)	0.85 (0.67–1.07)	0.87 (0.59–1.29)
Flushing	5.89 (4.11–8.45)	1.90 (1.43–2.50)	13.38 (8.54–20.95)
Agitation	1.12 (0.84–1.49)	–	1.16 (0.79–1.70)
Headache	–	–	–
Tiredness on waking	0.87 (0.65–1.16)	–	0.85 (0.57–1.26)
Irritability	0.99 (0.75–1.34)	–	0.89 (0.60–1.31)
Forgetfulness	1.12 (0.86–1.45)	–	1.09 (0.76–1.56)
Insomnia	0.99 (0.75–1.34)	1.34 (1.08–1.66)	2.06 (1.47–2.88)
Depressed mood	0.92 (0.66–1.29)	–	0.57 (0.37–0.89)
Migraine	–	–	–
Lack of energy	1.15 (0.84–1.57)	–	1.24 (0.81–1.89)
Waking at night	0.91 (0.67–1.15)	–	0.90 (0.62–1.30)
Restless legs	–	–	0.88 (0.63–1.28)
Lack of self-confidence	1.02 (0.73–1.41)	–	1.10 (0.72–1.68)

<sup>a</sup> Per comparison, only complaints that showed a *P*-value <0.10 at univariate level were entered in the analysis; <sup>b</sup> Coding of dependent variable: peri = 1, pre = 0; <sup>c</sup> Coding of dependent variable: post = 1, peri = 0; <sup>d</sup> Coding of dependent variable: post = 1, pre = 0.

complaints, seven items were significantly different. Five items were more prevalent postmenopause: vaginal dryness, pain during intercourse, flushing, daytime sweating and insomnia, while two items were less prevalent, i.e. vaginal discharge and night-time sweating (Table 3).

When we compared post- and premenopause and post- and perimenopause, three urogenital complaints (vaginal discharge, vaginal dryness and pain during intercourse) were independently significantly different. In the comparison between peri- and premenopause, no urogenital complaints were seen significantly more frequently in any of the categories.

## Discussion

The lack of agreement between epidemiological surveys evaluating climacteric complaints can be explained by methodological differences.<sup>9</sup> Most large-scale cross-sectional and longitudinal studies concern women seeking medical attention, visiting menopausal clinics<sup>10</sup> and volunteers attending screening programmes.<sup>11</sup> Only a few used random samples from the community.<sup>12–14</sup> Therefore, the samples used for most studies are not representative of the general population. This can lead to selection bias and reduces the possibility of generalizing

the results. The reported study is based on a large population-based sample of women around the menopause with a narrow age range (47–53 years). The results of our study apply only to women not using hormones at the time of the climacteric. About 24% of the women in the EPOS cohort used hormones: 10% used hormone replacement therapy (HRT) and 14% used oral contraceptives, and these women were excluded from the study. A proportion of women who choose to use HRT may be doing so to relieve some of the climacteric complaints investigated in this study. Therefore, if these women had not been using HRT and would, therefore, have been in the study, the percentage of women with complaints might have been higher and the correlation between complaints and menopausal transition even more prominent.

As far as we know, there are no other publications of cross-sectional general population surveys of this magnitude that study as narrow an age range as that which we used. Most of the larger cross-sectional studies used a much wider age range, and the observed changes in symptomatology could be the result of ageing, physical changes, experiences due to situational change or cohort differences.

The GP is the most suitable climacteric counsellor for (healthy) middle-aged women, and has to know which complaints are related to the various categories of climacteric status. By knowing the epidemiology of the variables examined, the GP can estimate the complaints at their true value with regard to the menopausal state.<sup>15–17</sup> This may also have implications for the way in which middle-aged women's views and behaviour are perceived by society.<sup>18</sup> Especially at the onset of the climacteric, there is no clinical sign that the transition has begun. Drawing conclusions retrospectively after a 1-year period of amenorrhoea is much easier than labelling symptoms as climacteric during the perimenopausal period, while there is still vaginal blood loss. GPs should have the possibility of assessing the probable onset of the climacteric by a simple questionnaire. With this knowledge, the GP could estimate the complaints presented at their true value with regard to the coming menopause. In our study, flushing was the only symptom that was significantly different when we compared all three menopausal phases together. Part of the vasomotor symptom complex (night-time sweating and daytime sweating) was only significantly different in multiple logistic regression analysis between post- and perimenopause. In our survey, in the premenopause, 3 and 1% of the women, respectively, presented with moderate or severe complaints of flushing, while in the perimenopause 16 and 10%, respectively, presented with these symptoms. In the perimenopause, the chance of flushing is much higher than in the premenopause (OR = 5.9), and the odds ratio is much smaller for the difference between post- and perimenopause (OR = 2.00). Oldenhavé and McKinlay also found the highest prevalence of modest

and severe vasomotor complaints in the late premenopause (6–12 months since last menstrual blood loss).<sup>12</sup>

We conclude that, in healthy middle-aged women at the onset of the climacteric, only flushing discriminates between pre- and perimenopause, suggesting the start of the menopausal transition.

The cluster of so-called typical climacteric complaints of the urogenital tract does not discriminate between pre- and perimenopause. The frequency of vaginal discharge, vaginal dryness and pain during intercourse is significantly different between perimenopause and postmenopause. One major finding of the study is that only flushing plays an important role in the onset of menopausal transition while urogenital complaints are more important when irregular vaginal blood loss proceeds towards a complete stop. The prevalence of insomnia is different between pre- and postmenopause and between peri- and postmenopause, while other variables concerning sleep, such as waking at night and tiredness on waking, are never significantly different. Although it has often been suggested that insomnia is related to nightly vasomotor problems,<sup>9</sup> especially between post- and premenopause we found insomnia to be independently different, whereas night-time sweating was not. Waking at night is the most frequent complaint in pre-, peri- and postmenopause (present in 62, 72 and 78%, respectively) without being significantly different at any menopausal phase (Table 2).

In our cross-sectional data, we found that 19% of women in the age range of 47–53 years had had a hysterectomy but had at least one ovary *in situ* (Table 1). These women no longer have vaginal blood loss so their transition to menopause cannot be assessed by a changing menstrual pattern. For this large subgroup, our findings of specific complaints in the early onset of the climacteric and later on towards postmenopause can be very helpful. For individual women, it is easier to answer the question of whether the transition from a normal menstrual pattern to complete amenorrhoea will be associated with typical complaints.

A major limitation of this study is the fact that we are attempting to make statements about the menopausal transition in a cross-sectional study. Cross-sectional designs can identify associations and can only suggest changes over time. Longitudinal cohort designs with repeated measurements in the same women can identify a temporal sequence in events or rate changes. Our observations still need to be confirmed in prospective studies.

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