

## Original Research Article

# Pattern of dermatological involvement in early postmenopausal period: a cross sectional study

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## ABSTRACT

**Background:** The high burden of menopausal symptoms notwithstanding, there is a paucity of published work evaluating its impact specifically on the skin and mucosa. With high incidence of underreported cases in developing countries, active screening of all women is essential for accurate assessment of prevalence of cutaneous features, as highlighted by this study. The objective of this study is to assess clinical patterns of dermatosis in menopausal women.

**Methods:** A cross-sectional study conducted in the dermatology department conducted on postmenopausal patients below 65 years having dermatoses after taking their written consent. Data analysis using SPSS 20.0.

**Results:** Of 350 postmenopausal women, 165 had genital involvement, atrophic vaginitis (41.21%) being the most common manifesting typically as vaginal dryness. Of 82 women having oral complaints, 42.7% women had complaints of pain or difficulty swallowing in the absence of mucosal lesions. Of the total sample size, 34% women had had female pattern hair loss, maximum women with grade I-2 (45.4%) and I-3 (36.13%). Two key findings which we did not find previous records of included incidence of keratoderma climactericum (2.29%) and hirsutism in early menopause which we found to be 8%. It is important to note that only 28% of women were aware that their complaints were related to menopause or chose to seek active treatment for existing complaints.

**Conclusions:** This study highlights the various clinical patterns of postmenopausal dermatoses to raise awareness in dermatologists and gynecologists for prompt diagnosis, treatment and patient education.

**Keywords:** Menopause, Atrophic vaginitis, Female pattern hair loss, Keratoderma climactericum

## INTRODUCTION

Menopause is defined as the complete cessation of menstruation for a minimum period of 12 months due to a decline in ovarian function with consequent development of an oestrogen deficient state.<sup>1</sup> The mean age of attaining menopause for Indian women is 46.24 years which is much lesser than their Western counter parts (51 years).<sup>2</sup>

Climacteric symptomatology includes vasomotor symptoms such as hot flushes, night sweats, pruritus, hyperhidrosis, joint and muscular discomfort, disturbance

in sleep or mood with irritability or depression, skin changes such as fine lines and wrinkles on the face and new onset menopausal acne and urogenital symptoms potentially leading to loss of sexual desire.

Estrogen receptors are found throughout the skin, although the topographic distribution varies, hence the resultant effects are widespread and diverse. More common are vulvovaginal problems - such as atrophic vulvovaginitis, vulvovaginal candidiasis, lichen sclerosus et atrophicus, dysaesthetic vulvodynia, lichen simplex chronicus, among others - manifesting variably as vaginal dryness, itching, pain or with urinary complaints.

Menopause is also associated with certain general dermatological problems such as flushing, oral discomfort, drying of the skin and keratoderma climactericum. These conditions require a more detailed workup and specific treatment plan. Hormonal imbalance also leads to hair changes in menopause, the two major changes being hirsutism and alopecia (mainly female pattern hair loss (FPHL)).<sup>3</sup>

This study was aimed at assessing the involvement of the skin and its appendages in postmenopausal women, excluding geriatric age group.

## METHODS

This cross-sectional study was carried out from January 2018 to June 2019 after approval from institutional human research ethics committee. 350 patients from outpatient department of department of dermatology of Dr. D. Y. Patil Medical College, Hospital and Research Centre with dermatoses involving any area of the body having achieved natural menopause presently below 65 years of age were included in the study.

Purpose of the study was explained to the patient in a language understood by patient following which written informed consent was obtained.

A predesigned semi-structured questionnaire was prepared documenting demographic data, personal, menstrual and obstetric history. This included specific physical and psychological changes experienced by the patient after onset of menopause. General examination, assessment of vital parameters and comprehensive head to foot clinical examination of skin and its appendages was carried out irrespective of clinical complaints. Patients underwent laboratory, histopathological and radiological investigations when required.

## Calculation

The data obtained was recorded and analysed using SPSS software version 20.0. Categorical data are assessed in form of whole numbers and percentages and continuous presented using measures of central tendency such as mean and standard deviation. Appropriate tests of significance such as chi square test were applied for analysis when required. For all statistical tests, a p value less than 0.05 is considered to be significant.

## RESULTS

Age of patients ranged from 42-65 years with mean age  $54.83 \pm 5.73$  years. Maximum patients belonged to age group 56-60 years (26.9%). Age of patients at the time of menopause ranged from 37-55 years with mean age  $45.36 \pm 3.23$  years. 4 patients had premature menopause at <40 years and only 1 patient had delayed menopause. Most of the women were housewives (60.2%) followed by those having a sedentary job (36.6%). Most of the

patients were married (96.6%). The most common comorbidity seen was diabetes mellitus in 15.4% cases followed by hypertension in 9.1% cases. Majority of the women consumed a vegetarian diet (65.7%). 82.5% women had undergone tubal ligation. 10.8% women had never used any form of contraception prior to menopause. Table 1, 57.1% of the study population was overweight with BMI above 25 (Table 2).

**Table 1: Sociodemographic profile of women.**

Sociodemographic characteristics	No. of cases	%
<b>Present age (in years)</b>		
41-45	22	6.3
46-50	75	21.4
51-55	87	24.9
56-60	94	26.9
61-65	72	20.6
<b>Age at menopause (in years)</b>		
≤40	12	3.4
41-45	191	54.6
46-50	125	35.7
51-55	22	6.3
<b>Occupation</b>		
Housewife	211	60.2
Sedentary job	128	36.6
Laborer	8	2.3
Other	3	0.9
<b>Marital status</b>		
Married	338	96.6
Unmarried	4	1.1
Widow	8	2.3
<b>Comorbidities</b>		
Diabetes mellitus	54	15.4
Hypertension	32	9.1
Hypothyroidism	2	0.6
Rheumatoid arthritis	1	0.3
Hypercholesterolemia	11	3.1
<b>Diet</b>		
Vegetarian	230	65.7
Non vegetarian	120	34.3
<b>Contraceptive used</b>		
Tubal ligation	287	82.5
Intrauterine device	5	1.4
Barrier	19	5.3
None	39	10.8

In physical symptoms, the most common was hot flushes seen in 64.57% women followed by excessive generalized sweating in 53.14% women. Sexual complaints, most common being vaginal dryness, were seen in 52.86% women (Table 3).

All of the women, on enquiry, had some or the other complaint related to menopause whether physical or psychological. Of these only 98 (28%) actually chose to

seek treatment for their complaints. The most common findings over the face and neck were wrinkles seen in

43.43% cases. This was followed by dermatophilosis seen in 28% cases.

**Table 2: Association between age at menopause and BMI of study population.**

BMI	Age at menopause (in years)				Total
	≤40	41-45	46-50	51-55	
<18.5	2	1	0	0	3
18.5-24.99	9	96	37	5	147
25 and above	1	94	88	17	200
Total	12	191	125	22	350

Chi-square=61.75, p<0.0001.

**Table 3: Physiological complaints related to skin or mucosal involvement associated with menopause.**

Symptoms	Age (in years)				Chi square	P value
	≤40 (n=12)	41-45 (n=191)	46-50 (n=125)	51-55 (n=22)		
Hot flushes	66.67	67.52	66.4	27.27	14.32	0.003
Dryness of skin	50	43.45	49.6	45.45	1.23	0.75
Weight gain	33.33	43.98	48.8	50	1.61	0.66
Sexual discomfort	33.33	43.98	49.6	31.82	3.35	0.34
Sweating	41.67	52.88	57.6	36.36	4.13	0.25
Itching	25	23.56	28.8	13.64	2.69	0.44
Vaginal dryness	25	46.07	62.4	72.72	15.32	0.002
Groin pain	8.33	7.85	9.6	4.55	0.74	0.86
Bladder discomfort	0	6.81	9.6	4.55	2.19	0.53
Vaginal discharge	8.33	8.38	4.8	0	3.26	0.35
Burning micturition	0	0.52	0	0	0.83	0.84

**Table 4: Skin changes in menopause wise distribution of cases in study group (n=350).**

Skin changes in menopause	No. of cases	%
Wrinkles	152	43.43
Xerosis	102	29.14
Dermatoheliosis	98	28
Acrochordon	59	16.86
Dermatosis papulosa nigra	38	10.86
Idiopathic guttate hypomelanosis	27	7.71
Seborrheic keratosis	25	7.14
Melasma	19	5.43
Asteatotic eczema	9	2.57
Senile purpura	9	2.58
Keratoderma climactericum	8	2.29
Senile comedones	5	1.43
Xanthelasma	3	0.86
Melanocytic nevi	1	0.29
Cherry angioma	1	0.29

The most common changes over the extremities was xerosis seen in 29.14% of the cases. On examination of skin over palms and soles, 8 out of 350 cases were found to have palmoplantar keratoderma acquired after menopause, i.e. keratoderma climactericum (Table 4). Of

the 165 women with lesions, 41.21% women had atrophic vaginitis. This was followed by fungal infections including tinea cruris in 26.06% women and vulvovaginal candidiasis in 16.97% women (Table 5).

Most women with complaints related to oral cavity had a mild general discomfort while eating but no specific burning sensation or dryness of mouth (42.68%). The most common specific lesion diagnosed was oral lichen planus in 16.97% women (Table 6).

**Table 5: Genital finding wise distribution of cases in study group (n=165).**

Genital finding	No of cases	%
AV	68	41.21
Tinea cruris	43	26.06
VVC	28	16.97
LSA	11	6.67
Intertrigo	4	2.42
Warts	4	2.42
LSC	3	1.81
Irritant dermatitis	2	1.21
Genital molluscum	2	1.21

The most common complaint related to hair was that of increased hair loss which in most cases clinically manifested as FPHL (34%). The 119 cases having FPHL were classified based on clinical severity as per the

Ludwig scale. Maximum women had grade I-2 (45.4%) and I-3 (36.13%). The most severe grade we found was grade II-1 in 2.52% women (Table 7).

**Table 6: Distribution of cases in study group as per lesions in oral cavity (n=82).**

Oral cavity lesions	No. of cases	%
<b>Aphthous ulcer</b>	12	14.63
<b>Vesiculobullous (VB)</b>	2	2.43
<b>Lichen planus (LP)</b>	15	18.29
<b>Toothache</b>	18	21.96
<b>Others</b>	35	42.69
<b>Total</b>	82	100.0

**Table 7: Distribution of cases having hair disorders (n=350).**

Hair disorder	No. of cases	%
<b>FPHL</b>	119	34
<b>Grade</b>		
I-1	5	4.20
I-2	54	45.4
I-3	43	36.13
I-4	14	11.76
II-1	3	2.52
<b>Total</b>	119	100.0
<b>Diffuse hair loss</b>	39	11.14
<b>Greying</b>	92	26.28
<b>Alopecia areata</b>	8	2.28
<b>Others</b>	22	6.28

## DISCUSSION

Menopause is a normal, physiological process in women with declining estrogen levels. The skin and genitals are areas heavily influenced by estrogen receptors and hence show the effects of estrogen deficiency.

A study by Ahuja found 46.2±4.9 years as the age of natural menopause in India.<sup>2</sup> Similar findings were seen in a study by Alva et al with mean age at menopause found to be 45.32 years with SD of ±2.79 with the range of (32-54).<sup>4</sup> A number of studies have reported a mean age at menopause in India ranging from 44 years to 48.84 years.<sup>5-7</sup>

Of associated comorbidities, diabetes mellitus was the most prevalent at 15.4% followed by hypertension at 9.1%. As blood investigations were not carried out as a routine part of the study it is possible that as yet undiagnosed cases may have been missed. Diabetic patients were most commonly found to have bacterial or fungal infections and papulo squamous conditions.

Over half of the women (57.1%) were found to have a BMI over 25. A study conducted by Dasgupta et al showed postmenopausal women to have a BMI significantly higher than premenopausal women along with an overall higher chance of developing metabolic syndrome.<sup>8</sup> The need to monitor metabolic parameters such as blood sugar levels, lipid profile, etc. is an important aspect. In contrast, a study by Sharma et al which focused on younger women found no significant difference between pre- and postmenopausal women.<sup>9</sup>

BMI was also found to be have positive correlation with age at menopause with women with low BMI reaching menopause significantly early.

On screening large populations of women, it is seen that the conditions typically considered to be associated with menopause are the primary complaint in a very small percentage of women. These include genital dermatosis, hirsutism, keratoderma climactericum and others. Our findings also revealed that many women did not give complaints of certain conditions (especially hot flushes and sexual and genitourinary complaints) except when asked specific questions. This is why retrospective studies such as the one conducted by Aboobacker et al are often incomplete.<sup>10</sup> Wrinkle folds were seen in 31.7% as opposed to 48% in a study by Nair et al.<sup>11</sup> On examining palms and soles, KC was seen in 2.29% cases which had not specifically been assessed by previous studies.

Previous studies in a population with similar ethnic background have found lower incidence of atrophic vaginitis and fungal infections.<sup>11,12</sup> The incidence of lichen sclerosis and lichen simplex chronicus was higher in these studies. Slight variation in findings could likely be related to differences in sample size and age of target population. In a study by Jahan et al, assessment by practitioner was done for diagnosis of atrophic vaginitis by checking vaginal maturation value which significantly increased the prevalence of AV from 49% to 56% as many asymptomatic women were also diagnosed.<sup>13</sup>

The study by Kaur et al focused on geriatric women and had a smaller sample size.<sup>12</sup> Increased prevalence of LSC indicates the likelihood that it is found more in later years of postmenopausal life.

Singh et al conducted a study on women presenting with vulvar lichen sclerosis and found that most of the women (69.2%) to be postmenopausal. As 9% cases maybe asymptomatic screening of postmenopausal women is recommended.<sup>14</sup>

With regard to superficial dermatophytic infections, prevalence is found to be higher in younger population especially infections in the groin.<sup>15</sup>

Prevalence of oral findings overall was low in our study with only 23.43% of women having complaints. Most of the women complained of a nonspecific oral discomfort without presence of any lesions. This discomfort included altered taste, occasional dryness or pain while swallowing. None of the patients in our study complained of severe pain. This was lower than findings of a study conducted by Wardrop et al which found 33% postmenopausal women to have oral discomfort.<sup>16</sup>

A case control study conducted in a dental hospital found that in a sample of 365 postmenopausal women with routine dental complaints, 27.1% women had dry mouth, 25.8% had mucosal burning or pain sensation, 6.3% had breath change and 3.6% had change in taste.<sup>11,17</sup>

15 of 82 women had oral lichen planus, which was higher than two previous studies having rates of 10.9% and 13.75% of patients respectively.<sup>11</sup>

As changes of greying and hair loss were overlapping, we assessed them out of the total sample size of 350 women and found that 34% had FPHL, 26.28% had greying, and 11.14% had diffuse hair loss. The incidence of hair changes in a study by Nair et al. in a rural population showed higher prevalence of greying at 45.89% and FPHL at 34.23%. The number of women having diffuse hair loss was lesser at 4.10%.<sup>11</sup>

The 119 cases having FPHL were classified based on clinical severity as per the Ludwig scale. Maximum women had grade I-2 (45.4%) and I-3 (36.13%). The most severe grade we found was grade II-1 in 2.52% women. We did not find previous studies giving a specific distribution as per grading limited to postmenopausal women. The absence of very severe Grade 3 or more severe stages could be explained by the exclusion of geriatric population in our study as more severe hair loss is seen with progression of age.

We found incidence of hirsutism in our study group to be 8%. Previous studies comparable in demographic factors assessing the same were not found.

## CONCLUSION

The aim of our study was to highlight the dermatological involvement due to hormonal alterations taking place in the early years of menopause. Women should be encouraged to visit specialists for conditions associated with menopause which they often avoid due to social stigma or embarrassment related to genital complaints. Over a prolonged period, this can affect quality of life and hamper daily activities.

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