


Short Communication

An International Study on Sensitive Skin Across Continents in Over 20,000 Women: Geographic and Age-Related Differences, Menstrual Regularities and Cycle Phase influence, and Effect on WEMWBS score

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The term "sensitive skin"(SS) encompasses the experience of unusual sensations like tingling, burning, or prickling, potentially accompanied by pain or itching, caused by various factors [1,2]. Physical (such as UV rays, temperature extremes, or wind), chemical (like cosmetics, soaps, water, or pollution), psychological (such as stress), or hormonal (related to menstrual cycles) factors have been described [1-4]. While "SS" commonly refers to facial skin, it can also affect other parts of the body like scalp, hands, or genitals. In women, SS can have a significant impact on their lives due to associated discomfort, inconvenience, and potential limitations. Studies on the prevalence of SS in the general population are scarce, and most of them are limited to one region [1-8]. Our objective was to conduct an international study in 20 countries in order to assess the prevalence of SS in women aged 18-55 y.o.

A representative sample of women, 18 and 55 y.o, was recruited in 20 countries [United States n=1200; Canada n=1200; France n=1200; Argentina n=750; Brazil n=1200; Chile n=750; China n=1200; Egypt n=1000; Germany n=1200; Greece n=751; Italy n=1200; Mexico n=1200;Nigeria n=500; Poland n=1200; Saudi Arabia n=1200; South Africa n=800; Spain n=1200; Thailand n=750; Turkey n=750;] using a stratified, proportional quota sampling (PQS) with a replacement design. PQS was used based on the distribution of the population according to age, sex, environment (large cities, towns, and rural areas), and income, in each participating country, in order to guarantee national representativeness of the sample.

A structured digital questionnaire with various sociodemographic data, the presence or absence of menses in the past year, and the regularity or irregularity of the menstrual cycle was provided to the participants. Menopausal women were those >40y.o with no menses for at least 12 months. The participants were asked to describe whether they perceive their skin as sensitive or not. We compared the prevalence of skin sensitivity according to 1) regularity or irregularity of the menstrual cycle, 2) phases of the menstrual cycle (premenstrual phase, menses phase, post-ovulatory), geographic regions (Europe, North America, Latin America, Middle East, East Asia), age (18-40 vs 40-55), and for those above 40, menopausal vs not menopausal. Moreover, using the Warwick-Edinburgh Mental Wellbeing Scales (WEMWBS), we compared in each of the groups 'regular' and 'irregular' menses, the degree of well-being.

In total, more than half of women reported having SS. The proportion of women with SS was significantly higher in those with irregular menses. There is no significant difference in prevalence of SS during the premenstrual phase vs menses phase vs post-ovulatory phase. The highest prevalence was noted in Middle East, followed by Europe, and the least prevalence

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Table 1: Prevalence of sensitive skin.

Global Population	Sensitive Skin		No Sensitive Skin	
	n	%	n	%
	10069	50.30%	9,933	49.70%
Regular Periods	4,442	47.10%	4,994	52.90%
Irregular Periods	4,364	57.60%	3,209	42.40%
	P-value	<0.0001		
Menopause	557	38.10%	906	61.90%
	n	%	n	%
Premenstrual Phase	779	45.60%	928	54.40%
Period Phase	543	45.30%	656	54.70%
Post-Ovulatory Phase	1604	47.90%	1748	52.10%
	P-value	17.20%		
North America	1,063	44.30%	1,337	55.70%
Europe	4,067	54.20%	3,434	45.80%
Latin America	1,872	48.00%	2,028	52.00%
Middle East	2,032	58.10%	1,468	41.90%
East Asia	1,034	38.30%	1,666	61.70%
	P-value	<0.0001		
Ages 18-40	4,922	54.20%	4,164	45.80%
Ages 40-55	5,146	47.10%	5,769	52.90%
	P-value	<0.0001		
40-55 years in Menopause	557	38.10%	906	61.90%
40-55 years old without Menopause	4,345	48.90%	4,542	51.10%
	P-value	<0.0001		

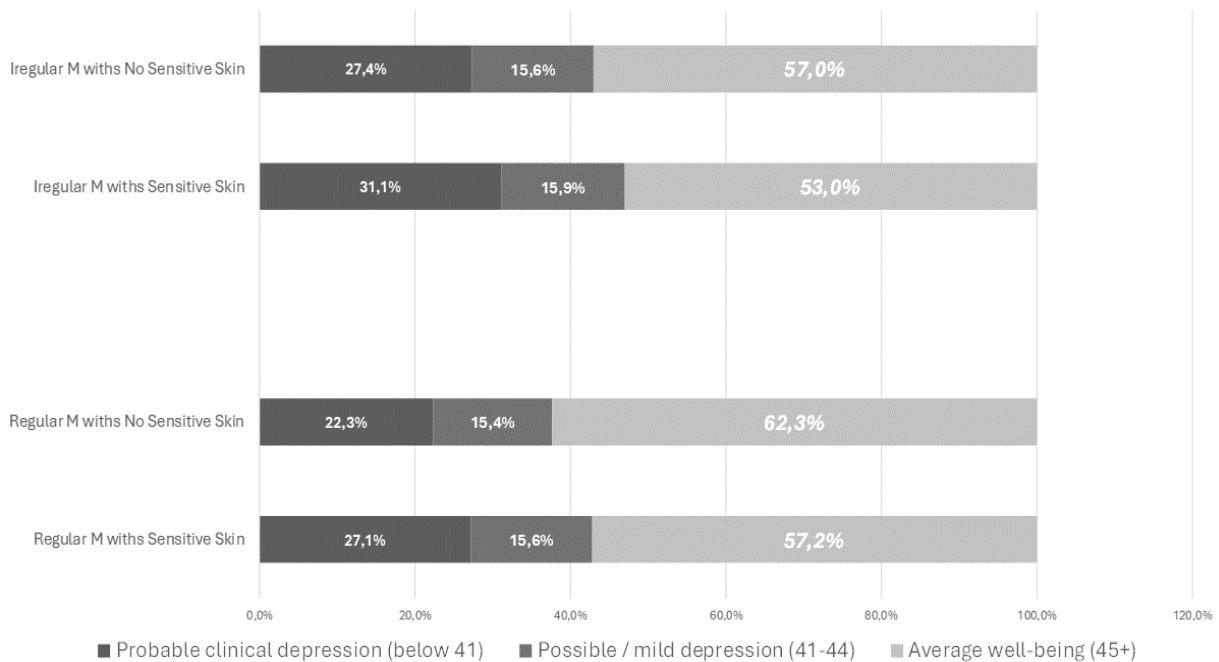


Figure 1: Degree of well-being according to the Warwick-Edinburgh Mental Wellbeing Scales (WEMWBS) in patients with sensitive vs not SS in each of the groups 'regular menses' and 'irregular menses'.

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in East Asia. Those below 40 years of age seem to have a significantly higher prevalence than those aged 40 and above. In particular, among women ≥ 40 y.o, those in menopause had a significantly lower prevalence of SS. Whether with regular or irregular menses, those with SS have lower WEMWBS score indicating probable poor mental health/well-being. Our study shows a high prevalence of SS in women in all regions of the world with geographic differences. Menstrual well-being plays a crucial role in women's overall health. Numerous females encounter irregularities in their menstrual cycles, which can profoundly affect their physical, mental, and social welfare [9]. Such irregularities may influence the skin's physiological properties and microbiota [9]. In contrast to those with regular menstrual cycles, individuals experiencing irregular menstrual cycles exhibit reduced skin hydration levels and increased trans-epidermal water loss [10]. Hormonal fluctuations, which govern irregular menstrual cycles, disrupt normal skin function, leading to skin health issues [9,10]. Understanding the importance of sensitive skin is essential for promoting overall skin health, improving quality of life for affected individuals, and guiding the development of appropriate skincare products and treatments. The effect of irregular cycles should be taken into consideration to support the need for selecting personal care routine or treatment.

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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