Prevalence of Sensitive Skin among the Thai Population in the Central Region

Pairot Woraphamorn[*] and Pawit Phadungsaksawasdi

Division of Dermatology, Chulabhorn International College of Medicine, Thammasat University,
Klongluang, Pathum Thani, Thailand
[*] Corresponding author, E-mail: p.woraphamorn@gmail.com

Abstract

Sensitive skin is a frequent disorder that makes the skin more sensitive to different stimuli-induced reactions, including tightness, stinging, burning, tingling, discomfort, and pruritus. It is a common and important clinical problem that impacts not just dermatologists but also the companies that provide cosmetics and skin care products. Still, how to diagnose, treat, and understand the pathophysiology of sensitive skin remains a topic for debate. Many years ago, surveys were used in numerous countries to do epidemiology studies on sensitive skin, which found a wide range of prevalence. Up to now, information about Thai prevalence studies of sensitive skin is still insufficient. Thus, the purpose of this study was to determine how common sensitive skin is among Thai people living in the central region. This study conducted a descriptive online survey using self-reported questionnaires. A total of 2866 participants were recruited through a quota method for this study. The findings revealed significant differences in age groups, skin types, skin phototypes, and locality compared with non-sensitive skin in the central region of Thailand. The prevalence of sensitive skin is 49.3% (M 54.4%, F 44.8%), and more than half of people with sensitive skin have slightly sensitive skin, with dust being the most common factor contributing to sensitive skin in the central region of Thailand. Furthermore, the DLQI data can demonstrate a negligible impact on the very sensitive, a moderate impact on the sensitive, and a highly substantial impact on the sensitive, which reflects the influence of sensitive skin on quality of life. In conclusion, this study is the first in Thailand to examine the prevalence and characteristics of sensitive skin in the population in the central region as raising awareness of sensitive skin conditions is beneficial.

Keywords: *Sensitive Skin, Prevalence, Central Region, Thai Population*

1. Introduction

The term "sensitive skin" refers to a sensory response brought on by environmental stimuli and/or contactors, typically without a clear clinical sign. Patients report a wide range of sensations, including itching, burning, tingling, pungency, thickening, and dryness of the skin. These symptoms may manifest within minutes to hours following contact with a cosmetic product, an environmental stimulant, or even during many topical product use events, which might initiate the conduction process through a cumulative effect.

Initially, it was identified as cosmetic intolerance syndrome (Maibach, 1987). Eventually, it was described as "status cosmeticus" (Fisher, 1990). Consequently, Sensitive Skin Syndrome (SSS) has been added to the name. Skin irritation, hypersensitivity, hyperreactivity, sensitivity, and intolerance are some of the possible synonyms for this disorder.

Many years ago, Japan (Kamide, Misery, Perez-Cullell, Sibaud, & Taieb, 2013), the United Kingdom (Willis et al., 2001), China (Xu et al., 2013), Belgium, France, Germany, Greece, Italy, Portugal, Spain, Switzerland (Misery, Boussetta, Nocera, Perez-Cullell, & Taieb, 2009a), the United States (Misery, Sibaud, Merial-Kieny, & Taieb, 2011), Brazil, Russia (Taieb, Auges, Georgescu, Perez Cullell, & Miséry, 2014), and Korea (Kim, Cheon, Misery, Taieb, & Lee, 2018) conducted epidemiology studies that showed a wide range of prevalence. In a study on sensitive skin in the Japanese population, 52.84% of men and 55.98% of women reported having fairly sensitive or very sensitive skin (Kamide, 2013). The study by Kim found

that 56.8% of the Korean population had sensitive skin. Participants with sensitive skin had a higher prevalence of skin diseases than those without sensitive skin (72.3% vs. 38.0%; P <.001). Those with sensitive skin were 2-3 times more reactive to food items, cosmetics, and environmental as well as climatic circumstances than non-sensitive skin groups (Kim et al., 2018).

According to a paper released in 2016, the prevalence rate worldwide was approximately 40% (Misery, Loser, & Ständer, 2016). A study by Farage showed that figure is consistent with prevalence percentages recorded in published research, which show that 37% of people have "moderate" or "very" sensitive skin and 66% have some degree of sensitivity (Farage, 2019).

Nevertheless, there is ongoing debate on the pathogenesis, diagnosis, and management of sensitive skin. The sensitive skin guideline is no longer available, so self-reporting is the sensitive diagnosis. There is currently no Thai prevalence data available for sensitive skin information. The purpose of this study is to examine the prevalence and features of sensitive skin among the Thai population in the central region.

2. Objectives

To estimate the prevalence and features of sensitive skin among the Thai population in the central region of the country.

3. Materials and Methods

A descriptive study was carried out using an online self-reporting questionnaire. The study protocol was authorized by the Human Research Ethics Committee of Thammasat University (MTU-EC-OO-0-219/66).

3.1 Questionnaire

Three sections made up the questionnaire: The first asks questions about demographics (age, gender, and locality), skin type, and photo skin type. The second section discusses facial skin sensitivity and associated factors. The following answers are reported by the subjects: "very sensitive," "sensitive," "slightly sensitive," and "not at all sensitive." Subjects evaluated their own skin sensitivity. The Dermatology Life Quality Index (DLQI) comprised the third section, which was used to assess quality of life, with ten questions divided into six categories including daily activities, leisure, work and school, personal relationships, symptoms and feelings, and treatment.

3.2 Survey

The questionnaire was distributed between November 2023 and January 2024 through internet platforms such as Facebook and Line Messenger, which are widely used in Thailand for social media.

3.3 Participants selection

The participants were selected according to the quota method (sex, age). For inclusion criteria, the participants had to be at least 18 years old and live in the central region of Thailand. Participants who were younger than 18 years old and/or who provided incomplete answers on the questionnaire were excluded.

3.4 Assessment

Demographic data: All participant data were assessed based on demographics (age group, skin type, Fitzpatrick skin phototype, smoking, alcohol consumption, and locality) and were classified by sex (male and female).

Sensitive skin: Only data from participants who answered any degree of sensitive skin were used to calculate the prevalence of sensitive skin (%) and classify the severity of sensitive skin ("very sensitive,"

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"sensitive," "slightly sensitive," and "not at all sensitive"). In addition, study factors were those associated with sensitive skin.

Quality of life: Only participants who answered with any degree of sensitive skin were assessed. The DLQI score (range of 0 to 30) that was used to evaluate the quality of life of sensitive skin was calculated as the mean ± S.D. (0–1 = no effect; 2–5 = little effect; 6–10 = moderate effect; 11–20 = very significant effect; and 21–30 = extremely significant effect).

3.5 Statistical analysis

The SPSS statistics program, version 29.0.2.0 (20), was used to analyze the data. The collected data were demonstrated by proportion, or percent, for categorical data. The mean ± SD was described for continuous data.

4. Results

4.1 Demographic data

Data from 2866 participants were collected, consisting of males and females (1329 and 1537, respectively). All participants were classified into 3 groups by age (18-25 years old, 26-50 years old, and 51 years old or older) which presented the teenage group, adult group, and elderly group, respectively. Data for each age group showed no significant difference between males and females, as seen in Table 1.

For skin type, females are more prone to dry skin and normal skin than males, but oily skin and acne skin show more in males than females, which is statistical significance. On the other hand, combination skin and not-so-sure skin types are not significant differences compared with sex.

In general, Fitzpatrick skin phototypes are divided into 6 types, but Thai people are mostly type III–V. This study classified 3 groups, and Table 1 shows that Fitzpatrick skin phototypes III and V show a significant difference.

For smoking (270/1329, 20.3% vs. 42/1537, 2.7%) and alcohol drinking (566/1329, 42.6% vs. 350/1537, 22.8%), the data show that males are more likely than females to have statistical significance.

Locality was classified into 3 groups, comprising Bangkok, perimeter, and other provinces, where there was no difference between sex groups.

Table 1. Demographics and characteristics of participants

	Total (n=2866)	Male (n=1329)	Female (n=1537)
Age group (years)			
18-25	472 (16.5)	224 (16.9)	249 (16.2)
26-50	2200 (76.8)	1026 (77.2)	1174 (76.4)
51 and up	193 (6.7)	79 (5.9)	114 (7.4)
Skin type			
Dry	342 (11.9)	132 (9.9)*	210 (13.7)*
Normal	1189 (41.5)	507 (38.1)*.	682 (44.4)*
Combination	564 (19.7)	247 (18.6)	317 (20.6)
Oily	472 (16.5)	282 (21.2)*	190 (12.4)*
Acne	283 (9.9)	155 (11.7)*	128 (8.3)*
Not sure	16 (0.6)	6 (0.5)	10 (0.7)
Fitzpatrick skin phototype			
Type 3	1384 (48.3)	499 (37.5)*	885 (57.6)*
Type 4	1089 (38.0)	525 (39.5)	564 (36.7)
Type 5	393 (13.7)	305 (22.9)*	88 (5.7)*
Smoking	312 (10.9)	270 (20.3)*	42 (2.7)*
Alcohol drinking	916 (32.0)	566 (42.6)*	350 (22.8)*
Locality			

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Bangkok	700 (24.4)	318 (23.9)	382 (24.9)
Perimeter	892 (31.1)	420 (31.6)	472 (30.7)
Other	1274 (44.4)	591 (44.5)	683 (44.4)
Sensitive skin			
Yes	1412 (49.3)	723 (54.4)*	689 (44.8)*
No	1361 (47.5)	574 (43.2)*	787 (51.2)*
Not sure	93 (3.2)	32 (2.4)*	61 (4.0)*

* Comparison between male and female (p-value < 0.05)

4.2 Sensitive skin and associated factors

Half of the individuals (1412/2866, 49.3%) reported having sensitive skin, with 44.8% of women and 54.4% of men reporting having some level of sensitive skin and significance related to sex, age group, skin type (only dry skin, normal skin, acne skin), Fitzpatrick skin phototype III, V, smoking, alcohol drinking, and locality, as seen in Table 2.

Table 2. Participant characteristics associated with sensitive skin condition

	Not at all SS (n=1361)	Slightly SS (n=819)	Sensitive (n=498)	Very SS (n=95)
Sex				
Male	574 (42.2)*	471 (57.5)**	224 (45.0)	28 (29.5)****
Female	787 (57.8)*	348 (42.5)**	274 (55.0)	67 (70.5)****
Age group (years)				
18-25	272 (20.0)*	101 (12.3)	83 (16.7)	11 (11.6)
26-50	975 (71.6)*	684 (83.5)	389 (78.1)	76 (80.0)
51 and up	114 (8.4)*	34 (4.2)	26(5.2)	8 (8.4)
Skin type				
Dry	129 (9.5)*	109 (13.3)	72 (14.5)***	26 (27.4)****
Normal	641 (47.1)*	348 (42.5)**	173 (34.7)***	18 (18.9)****
Combination	249 (18.3)	131 (16.0)**	122 (24.5)	20 (21.1)
Oily	223 (16.4)	149 (18.2)	67 (13.5)	12 (12.6)
Acne	112 (8.2)*	81 (9.9)	64 (12.9)	18 (18.9)****
Not sure	7 (0.5)	1(0.1)	0 (0)	1(1.1)
Fitzpatrick skin phototype				
Type 3	693 (50.9)*	291 (35.5)**	275 (55.2)***	66 (69.5)****
Type 4	515 (37.8)	387 (47.3)**	141 (28.3)	22 (23.2)****
Type 5	153 (11.2)*	141 (17.2)	82 (16.5)	7 (7.4)****
Smoking	128 (9.4)*	116 (14.2)	58 (11.6)	6 (6.3)
Alcohol drinking	378 (27.8)*	291 (35.5)	183 (36.7)	33 (34.7)
Locality				
Bangkok	294 (21.6)*	165 (20.1)**	167 (33.5)	25 (26.3)
Perimeter	422 (31.0)*	264 (32.2)**	151 (30.3)	32 (33.7)
Other	645 (47.4)*	390 (47.6)**	180 (36.1)	38 (40)

* Comparison between not at all sensitive skin and any degree of sensitive skin (p-value < 0.05)

** Comparison between slightly sensitive skin and sensitive skin (p-value < 0.05)

*** Comparison between sensitive skin and very sensitive skin (p-value < 0.05)

**** Comparison between very sensitive skin and slightly sensitive skin (p-value < 0.05)

Table 3 shows that dust is the most important factor for sensitive skin (911/1412, or 64.5%). The second and third factors are skin care and fragrance, respectively.

Table 3. Environmental factors associated with sensitive skin

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Factor	Total (n=1412)	Slightly SS (n=819)	Sensitive (n=498)	Very SS (n=95)
Cold	349 (24.7)	161 (19.7)	132 (26.5)	56 (58.9)
Heat	518 (36.7)	210 (25.6)	236(47.4)	72 (75.8)
Sunshine	596 (42.2)	217 (26.5)	300 (60.2)	79 (83.2)
Wind	261 (18.5)	114 (13.9)	110 (22.1)	37 (38.9)
Skin care	848 (60.1)	409 (49.9)	360 (72.3)	79 (83.2)
Fragrance	640 (45.3)	292 (35.7)	281 (56.4)	67 (70.5)
Air condition	153 (10.8)	64 (7.8)	61 (12.2)	28 (29.5)
Water	217 (15.4)	93 (11.4)	95 (19.1)	29 (30.5)
Dust	911 (64.5)	436 (53.2)	394 (79.1)	81 (85.3)
Stress	584 (41.4)	312 (38.1)	214 (43.0)	58 (61.1)
Alcohol	138 (9.8)	29 (3.5)	80 (16.1)	29 (30.5)
Smoking	343 (24.3)	98 (12.0)	189 (38.0)	56 (58.9)
Spicy food	184 (13.0)	43 (5.3)	100 (20.1)	41 (43.2)

4.3 Quality of life

According to the findings, greater severity scored higher than lower severity (very sensitive skin, slightly SS, and sensitive skin: 2.3 ± 3.0, 7.1 ± 5.7, and 13 ± 7.7, respectively), as seen in Table 4, which reflects the impact of sensitive skin on quality of life.

Table 4. Dermatology Life Quality Index (DLQI) classified by sensitive skin severity

	Slightly SS (n=819)	Sensitive (n=498)	Very SS (n=95)
DLQI (mean ±SD)	2.3 ± 3.0**	7.1 ± 5.7***	13 ± 7.7****

** Comparison between slightly sensitive skin and sensitive skin (p-value < 0.05)

*** Comparison between sensitive skin and very sensitive skin (p-value < 0.05)

**** Comparison between very sensitive skin and slightly sensitive skin (p-value < 0.05)

Discussion

Dermatologists continue to observe the prevalence of sensitive skin and its correlation with related factors to be both an appealing and difficult topic. Particularly, the pathogenesis of sensitive skin needs to be clarified in order to enhance intervention strategies. This includes the biochemical and pathophysiological mechanisms that produce sensitive skin. Nevertheless, a significant amount of research, including this study using comparable methods as a crucial first step, has so far mostly focused on the prevalence and associated characteristics of sensitive skin.

It remain intriguing to consider the connection between "sensitive skin" and "Fitzpatrick's phototype." The current study discovered similar trends to the French study (Guinot et al., 2006), despite the fact that the majority of Thai people have Fitzpatrick's phototype III-V. Very sensitive skin and sensitive skin in the female group were considerably more common in those with fair skin tones. Furthermore, sunshine was among the top three linked factors for people with very sensitive skin and sensitive skin, according to this study. The evaluation of the correlations between the skin reactions shows that sun sensitivity is a significant factor in determining skin sensitivity. It also shows the connection between people with fair skin tones and the incidence of facial flushing after sun exposure. The reactions are believed to be connected to vascular responsiveness. Additionally, the proportion of dry skin is larger in the sensitive skin and very sensitive skin groups compared to the not-at-all sensitive and slightly sensitive skin groups. It is strongly associated with transepidermal water loss, which is greater in response to irritants and the malfunctioning of

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the skin barrier. Although the overall prevalence is 49.3% (44.8% of women and 54.4% of men), the prevalence of sensitive skin to very sensitive skin is 22.2% of women and 19.0% of men. The prevalence is significantly lower than that of France, the United States, and the United Kingdom (about 40% of males and 60% of females), according to earlier studies (Misery et al., 2005; Willis et al., 2001). It may help to partially explain why the prevalence of "sensitive skin" in this study is lower than that of earlier studies. Furthermore, variations in skin phototype, frequency of cosmetic use, temperature, and geographic factors may also be contributing factors. Interestingly, this study discovered that sensitive skin to very sensitive skin was more common in women than in males, according to the results of other investigations (Misery, Boussetta, Nocera, Perez-Cullell, & Taieb, 2009b).

It is commonly known that pollution, temperature, and geographic factors might affect those with sensitive skin (Farage & Maibach, 2010; Misery et al., 2007). This is in line with this research, which shows that the overall prevalence of very sensitive and sensitive skin varies among the three locality groups (Bangkok 27.4%, perimeter 20.5%, and other province 17.1%). Notably, air pollution is a bigger issue in Bangkok and the surrounding areas than in any other province, which is consistent with the data that dust is the most important factor for sensitive skin. This may help to explain why the prevalence of sensitive skin varies in different cities.

5. Conclusion

Based on the research findings, the prevalence of sensitive skin among Thai people in the central region is lower than in other countries, though women are more likely than men to have sensitive to very sensitive skin, which includes fair skin tones and dry skin, which tends to become sensitive to very sensitive, as reported by previous studies. This study focused on only one part of Thailand. In order to more fully reflect Thai population, further study should be conducted throughout the country.

6. Acknowledgements

7. References (up to 30 references)

Farage, M. A. (2019). The Prevalence of Sensitive Skin. *Frontiers in Medicine*, *6*, 98. https://doi.org/10.3389/fmed.2019.00098

Farage, M. A., & Maibach, H. I. (2010). Sensitive skin: closing in on a physiological cause. *Contact Dermatitis*, *62*(3), 137–149. https://doi.org/10.1111/j.1600-0536.2009.01697.x

Guinot, C., Malvy, D., Mauger, E., Ezzedine, K., Latreille, J., Ambroisine, L., ... & Tschachler, E. (2006). Self-reported skin sensitivity in a general adult population in France: data of the SU.VI.MAX cohort. *Journal of the European Academy of Dermatology and Venereology*, *20*(4), 380–390. https://doi.org/10.1111/j.1468-3083.2006.01455.x

Kamide, R., Misery, L., Perez-Cullell, N., Sibaud, V., & Taieb, C. (2013). Sensitive skin evaluation in the J apanese population. *The Journal of dermatology*, *40*(3), 177-181. https://doi.org/10.1111/1346-8138.12027

Kim, Y. R., Cheon, H. I., Misery, L., Taieb, C., & Lee, Y. W. (2018). Sensitive skin in Korean population: An epidemiological approach. *Skin Research and Technology*, *24*(2), 229–234. https://doi.org/10.1111/srt.12418

Misery, L., Boussetta, S., Nocera, T., Perez-Cullell, N., & Taieb, C. (2009a). Sensitive skin in Europe. *Journal of the European Academy of Dermatology and Venereology*, *23*(4), 376–381. https://doi.org/10.1111/j.1468-3083.2008.03037.x

Misery, L., Boussetta, S., Nocera, T., Perez-Cullell, N., & Taieb, C. (2009b). Sensitive skin in Europe. *Journal of the European Academy of Dermatology and Venereology*, *23*(4), 376–381. https://doi.org/10.1111/j.1468-3083.2008.03037.x

Misery, L., Loser, K., & Ständer, S. (2016). Sensitive skin. *Journal of the European Academy of Dermatology and Venereology*, *30*(S1), 2–8. https://doi.org/10.1111/jdv.13532

Misery, L., Myon, E., Martin, N., Consoli, S., Boussetta, S., Nocera, T., & Taieb, C. (2007). Sensitive skin: psychological effects and seasonal changes. *Journal of the European Academy of Dermatology and Venereology*, *21*(5), 620–628. https://doi.org/10.1111/j.1468-3083.2006.02027.x

Misery, L., Myon, E., Martin, N., Verrière, F., Nocera, T., & Taieb, C. (2005). Peaux sensibles en France : approche épidémiologique. *Annales de Dermatologie et de Vénéréologie*, *132*(5), 425–429. https://doi.org/10.1016/S0151-9638(05)79303-0

Misery, L., Sibaud, V., Merial-Kieny, C., & Taieb, C. (2011). Sensitive skin in the American population: prevalence, clinical data, and role of the dermatologist. *International Journal of Dermatology*, *50*(8), 961–967. https://doi.org/10.1111/j.1365-4632.2011.04884.x

Taieb, C., Auges, M., Georgescu, V., Perez Cullell, N., & Miséry, L. (2014). Sensitive skin in Brazil and Russia: An epidemiological and comparative approach. *European Journal of Dermatology*, *24*(3), 372–376. https://doi.org/10.1684/ejd.2014.2367

Willis, C. M., Shaw, S., De Lacharriere, O., Baverel, M., Reiche, L., Jourdain, R., ... & Wilkinson, J. D. (2001). Sensitive skin: an epidemiological study. *British Journal of Dermatology*, *145*(2), 258–263. https://doi.org/10.1046/j.1365-2133.2001.04343.x

Xu, F., Yan, S., Wu, M., Li, F., Sun, Q., Lai, W., ... & Xu, J. (2013). Self-declared sensitive skin in China: a community-based study in three top metropolises. *Journal of the European Academy of Dermatology and Venereology*, *27*(3), 370–375. https://doi.org/10.1111/j.1468-3083.2012.04648.x