

Letter to the Editors

Associations between body mass index values and dermatological variables in college students

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Received 1 August 2020

Accepted 6 August 2020

Dear Editors-in-Chief

A 2016 report from the World Health Organization claimed that more than 650 million adults were obese and that more than 1.9 billion adults were overweight [1]. In the Republic of Korea (ROK), the Fifth Korea National Health and Nutrition Examination Survey, which was conducted in 2017, found that the prevalence of obesity in persons older than 30 years was 42.4% for men and 27.7% for women [2]. The survey also found that the country's obesity rate has been continuously increasing in recent years. Obesity has become a serious public health problem in the ROK.

Numerous studies have examined obesity as a public health problem, and these studies have consistently found that obesity is a major risk factor for many serious conditions and chronic diseases [3]. However, to the best of our knowledge, no previous study has examined the associations between obesity and dermatological outcomes. We therefore conducted this study to examine the correlations between body mass index (BMI) values and dermatological variables in female Korean college students.

All study procedures were approved by the Institutional Review Board of Youngsan University (Busan, ROK; approval no. YSUIRB-201907-HR-054-02), and all participants provided informed consent. The study sample comprised 141 female Korean college students who did not regularly engage in exercise training, did not smoke or drink alcohol, and had no orthopedic problems or histories of drug abuse. The participants were recruited through the Youngsan University Beauty and Healthcare Center from October 2019 to February 2020.

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Table 1
Participant characteristics

Variables	Mean \pm SD in the participants ($n = 141$)
Age (y)	20.91 \pm 1.57
Height (cm)	161.19 \pm 9.68
Weight (kg)	60.29 \pm 11.73
BMI (kg/m ²)	23.89 \pm 11.74
<i>Dermatological variables</i>	
Pores (%)	47.43 \pm 9.47
Wrinkles (%)	18.87 \pm 13.48
Dermal pigmentation (%)	10.89 \pm 6.15
Epidermal pigmentation (%)	10.64 \pm 6.84
Sebum level (total count)	83.57 \pm 125.70
Porphyryn level (%)	29.45 \pm 22.26
Skin tone (%)	56.75 \pm 2.90

Abbreviations: BMI, body mass index; SD, standard deviation.

Table 2
Correlations between BMI values and dermatological variables

Variables	Correlation with BMI (kg/m ²)	
	Pearson's r	p
Pores (%)	-0.017	0.841
Wrinkles (%)	-0.028	0.739
Dermal pigmentation (%)	-0.029	0.733
Epidermal pigmentation (%)	0.059	0.490
Sebum level (total count)	0.056	0.509
Porphyryn level (%)	-0.002	0.978
Skin tone (%)	0.011	0.893

Abbreviation: BMI, body mass index.

The participants' heights and weights were assessed with an InBody-720 device (Biospace, Seoul, ROK), and their BMI values were calculated. Ten minutes after a participant had washed her face, a JANUS-2 facial analysis system (PSI, Seoul, ROK) was used to assess the skin. The JANUS-2 system uses nonpolarized visible light to assess pores and wrinkles, polarized visible light to assess epidermal pigmentation and flush, and ultraviolet light to assess dermal pigmentation and the levels of sebum, porphyrin, and dead skin cells. Each participant's face was imaged three times while they kept their eyes closed and rested their forehead and lower jaw against support structures. After imaging, the software for the JANUS-2 system was used to adjust the facial area and assess dermatological variables along the jawline, within the T-zone, below the eyes, and on the cheeks. The measured variables included total sebum levels and percentage values for pores, wrinkles, epidermal pigmentation, dermal pigmentation, porphyrin levels, and skin tone.

All data are presented as means \pm standard deviations. These summary statistics measures are appropriate because the central limit theorem establishes that if a sample includes more than 30 measurements, the data will have an approximately normal distribution and will be reliable [4]. To test for correlations between BMI values and dermatological variables, Pearson coefficients were calculated with SPSS version 18.0 (IBM, Armonk, NY, USA). We selected $p < 0.05$ as our threshold for statistical significance.

The participants' characteristics are shown in Table 1, and the Pearson coefficients for correlations between BMI values and dermatological variables are shown in Table 2. There were no significant correlations between BMI values and dermatological variables ($p > 0.05$).

We conclude that BMI values are not associated with dermatological variables in female Korean college students and that obesity is not a modifiable risk factor for adverse dermatological outcomes.

Conflict of interest

The authors declare that there is no conflict of interest.

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