

Relationship between sleep quality and facial sebum levels in women with acne vulgaris

Sir,

Sleep has a strong regulatory role in general body function. Studies have shown that poor sleep quality is associated with an increased risk of physical and mental health problems.^[1] It is characterised by short sleep duration, insomnia and altered sleep latency. Very little research has been done on the association between sleep quality and skin function.^[2] The present study aims to investigate the association between facial sebum secretion levels and sleep quality in women with acne vulgaris. In addition, the severity of depression was assessed to account for potential confounding variables.

We selected women suffering from acne vulgaris, who were between 18 to 40 years old. We included those who (1) had not taken isotretinoin or any other medications known to affect sebum secretion, (2) had not used a topical treatment for acne within the previous month, and (3) had normal menstrual periods, and were within the follicular phase. Patients were excluded if they had a history of physical or dermatologic disease besides acne or a significant cognitive problem. The study was approved by the ethical committee of the Selcuk University Hospital. Informed consent was taken from all participants.

Sebum levels at the surface of the facial skin were measured using a Sebumeter (SM815; Courage and Khazaka; Cologne, Germany).^[3] Five facial sites were selected: The forehead, nose, right and left cheeks and chin. The areas were classified as a high sebum-secreting zone (the T-zone which included the forehead, nose and chin) and a low sebum-secreting zone (the U-zone which included both cheeks). The Pittsburgh sleep quality index and the Beck depression inventory were administered to participants.

Eighty five women with acne vulgaris were enrolled in this study. The mean age was 22.0 ± 4.9 years (range: 18–40 years). According to the Pittsburgh sleep quality index, 44 (51.8%) participants were good sleepers and 41 (48.2%) participants were poor sleepers. The mean sebum level over the T-zone and

the entire face was significantly higher for the good sleepers than for the poor sleepers. However, no significant difference was found between the good sleepers and the poor sleepers for sebum levels in the U-zone [Table 1].

The mean Beck depression inventory scores were significantly higher in poor sleepers [Table 1]. Therefore, the skin sebum levels of the participants were also assessed after co-varying the effects of depression. The age of participants were included as a covariate because of the potential effects of age on variables. According to covariance analyses, the differences in sebum levels over the T-zone ($F = 7.56$, $P = 0.007$, $\eta^2p = 0.085$) and the entire face ($F = 5.31$, $P = 0.024$, $\eta^2p = 0.062$) remained significant between the two groups.

The results of this study provide preliminary evidence that good sleep quality is associated with elevated sebum levels over the T-zone in women with acne vulgaris. Although increased sebum production is one of the major pathogenic factors promoting acne vulgaris, it also has some protective effects over the body. Sebum creates a barrier against exogenous oxidative insults such as sunlight.^[3] Sebocytes are a part of the innate immune system and have antimicrobial components. Sleep performs protective and restorative functions for the skin. Studies have suggested that acute sleep deprivation and poor sleep quality may impair the integrity of the skin. This may be associated with skin ageing and impaired response to exogenous stressors.^[1,2] Sleep also plays a strong regulatory role in hormonal rhythms.^[1] Various studies report that good sleep quality increases the levels of plasma insulin-like growth factor-1 and dehydroepiandrosterone sulfate.^[4] Positive correlations among serum insulin-like growth factor-1, dehydroepiandrosterone sulfate levels

Table 1: Comparisons of skin sebum levels and the BDI scores for good and poor sleepers

Study variables	Good sleepers (n=44)	Poor sleepers (n=41)	t	P	Cohen's d
Sebum T-zone ($\mu\text{g}/\text{cm}^2$)	146.8 \pm 55.1	115.1 \pm 43.6	2.93	0.004	0.638
Sebum U-zone ($\mu\text{g}/\text{cm}^2$)	91.6 \pm 60.7	80.0 \pm 49.8	0.97	0.334	0.208
Sebum total ($\mu\text{g}/\text{cm}^2$)	124.7 \pm 52.4	101.0 \pm 43.5	2.26	0.026	0.492
BDI score	7.8 \pm 6.7	11.6 \pm 6.9	-2.60	0.011	-0.558

BDI: Beck depression inventory

and mean facial sebum excretion have been detected.^[5] Therefore, sleep may affect sebum levels via its interactions with these hormones. We propose that our findings regarding the positive relationship between good sleep quality and higher sebum levels may be related to these physiologic characteristics of sleep and sebum.

The lack of a control group may be regarded as a limitation of this study. However, acne vulgaris is a very common phenomenon in this age group. The present study aims only to compare the facial sebum levels between good sleepers and poor sleepers. This study suggests that good sleep quality patterns increase seborrhea among women with acne vulgaris.

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Conflicts of interest

There are no conflicts of interest.

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