

SKIN COLORS DO NOT INTERFERE WITH OXYGEN SATURATION MEASUREMENTS WITH PULSE OXIMETER

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Objective: Previous report claimed that patients with darker skin were not treated properly due to the false reading of pulse oximeter. Thus we tested the hypothesis that the pulse oximeter will show a higher oxygen

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saturation (SpO₂) compared to the real value in subjects with darker compared to lighter skin tones by measuring hemoglobin SpO₂ with a pulse oximeter in healthy students of different skin colors.

Patients and Methods: 42 (30 women and 12 men), aged 18-37, healthy Hungarian and foreign students of Semmelweis University participated in the research. The heart rate and SpO₂ were measured with a finger-clipped pulse oximeter. Photos of the students' fingers were taken, and the skin color was evaluated by the Fitzpatrick scale. In addition, the students filled out a questionnaires assessing their general health conditions (1: no symptoms; 2: mild complaints; 3: severe complaints) and general physical conditions (1: no physical activity; 6: 6 per week/day).

Results: Majority of the students reported to be healthy (83.3%) and doing regular physical activity (83.3%). There was a negative, weak, but significant relationship between Fitzpatrick scale value and oxygen saturation ($\rho(25) = -0.318$; $p = 0.04$).

Conclusions: Thus in healthy individuals, the pulse oximeter did not measure higher values with darker, compared to those with lighter skin colors. Thus, our Results questioning the Conclusions of previous reports that skin pigmentation influenced the SpO₂ measured by the pulse oximeter and thus the care of Covid-19 patients.