

# Does Fingernail Polish Affect Pulse Oximeter Readings?

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## Context

Pulse oximetry, the transcutaneous measurement of blood oxygen saturation, is an integral part of diagnostic medicine. Previous studies evaluating the effect of nail polish on pulse oximeter readings (SpO<sub>2</sub>) are inconsistent. Establishing the effect of polish is relevant to clinical practice, since removing nail polish requires clinical time and supplies.

## Objective

To determine if finger nail polish affects SpO<sub>2</sub>

## Design

Randomized control trial

## Setting

Outpatient clinic in Charleston, SC

## Participants

There were 27 healthy volunteers with pulse oximeter readings  $\geq 95\%$  and no known or suspected peripheral perfusion problems.

## Instruments

Nellcor N20 and N595 pulse oximeters

## Outcome Measures

Primary Outcome: Spectrophotometry readings were obtained for the nail polish colors used (red, orange, yellow, green, blue, purple, pink, black, brown, white). The mean SpO<sub>2</sub> was measured on each of ten nails with and without nail polish using the usual probe position and was obtained using both the N20 and N595. Means were compared using paired t-tests.

## **Results**

The mean SpO<sub>2</sub> before applying blue polish were 98.89 and 98.33 with the N20 and N595 respectively. Means decreased after painting to 98.26 and 97.44 (both  $p < 0.05$ ). These changes represent  $< 1\%$  difference in readings. No other nail polish colors caused significant differences.

## **Conclusion**

Finger nail polish does not appear to cause a clinically significant change in pulse oximeter readings in healthy people. Future studies should evaluate the effect of nail polish in individuals with SpO<sub>2</sub>  $< 95\%$ .