



Effect of the face mask on oxygen saturation

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Introduction

- We all wish to avoid becoming infected by some infections, particularly viruses, and the face masks have become indispensable in providing such protection.
- A face mask is a product that covers the nose and mouth of the wearer.
- There are various types of face masks available, surgical, fabric and respirators (also known as filtering face piece respirators – FFP) which is available at different performance levels such as FFP2, FFP3 masks, but widespread use of face masks is limited, owing to concerns about inadequate gas exchange and they are unconfutable.^{1,2}
- The Aim of this study is to know the effect of face masks on healthy individuals and in connective tissue disorder associated with interstitial lung diseases patients.

Methodology

- There are three articles, one talks about the effect of face masks on normal healthy people and the other two articles talks about the facemasks effect on the interstitial lung disease associated with connective tissue disease “CTD-ILD” patients.

Results

- We enrolled 50 people, 34 of whom (68%) are female, 16 people said they had a substantial co-morbidity, asthma (n = 6) and hypertension (n = 4). With or without face mask, While sitting, the baseline heart rate was 73.2 (67.0–79.4) beats per minute, the baseline SpO₂ was 97.3 (96.6–98.1%), and the baseline CO₂ was 38.8 (35.7–44.1) mmHg. Baseline readings when walking were 101.2 (89.0–111.8) bpm, respectively. There were no statistically significant variations in heart rate while sitting with a cotton mask compared to sitting without one. There were no statistically significant differences seen while walking with a cotton mask in the heart when compared to walking without one.²

Table 1 Parameters during 6MWT in 36 patients with connective tissue disorder-associated interstitial lung diseases with and without face masks

	Without face masks	With face masks	Test for significance*, p value
Distance covered (m)	264.3 (44.1)	251.4 (51.4)	0.004
Baseline oxygen saturation (%)	97.4 (2.4)	97 (2.8)	0.15
Oxygen saturation (%) at completion of 6MWT	94.4 (5.7)	92 (6.5)	0.03
Drop in oxygen saturation (%)	3.0 (3.8)	4.1 (4.5)	0.03
Time taken for recovery of oxygen saturation (s)	35.4 (65.2)	67.1 (78.0)	0.002
Number who had rise in Borg Dyspnoea Scale by at least single unit	21	30	0.008

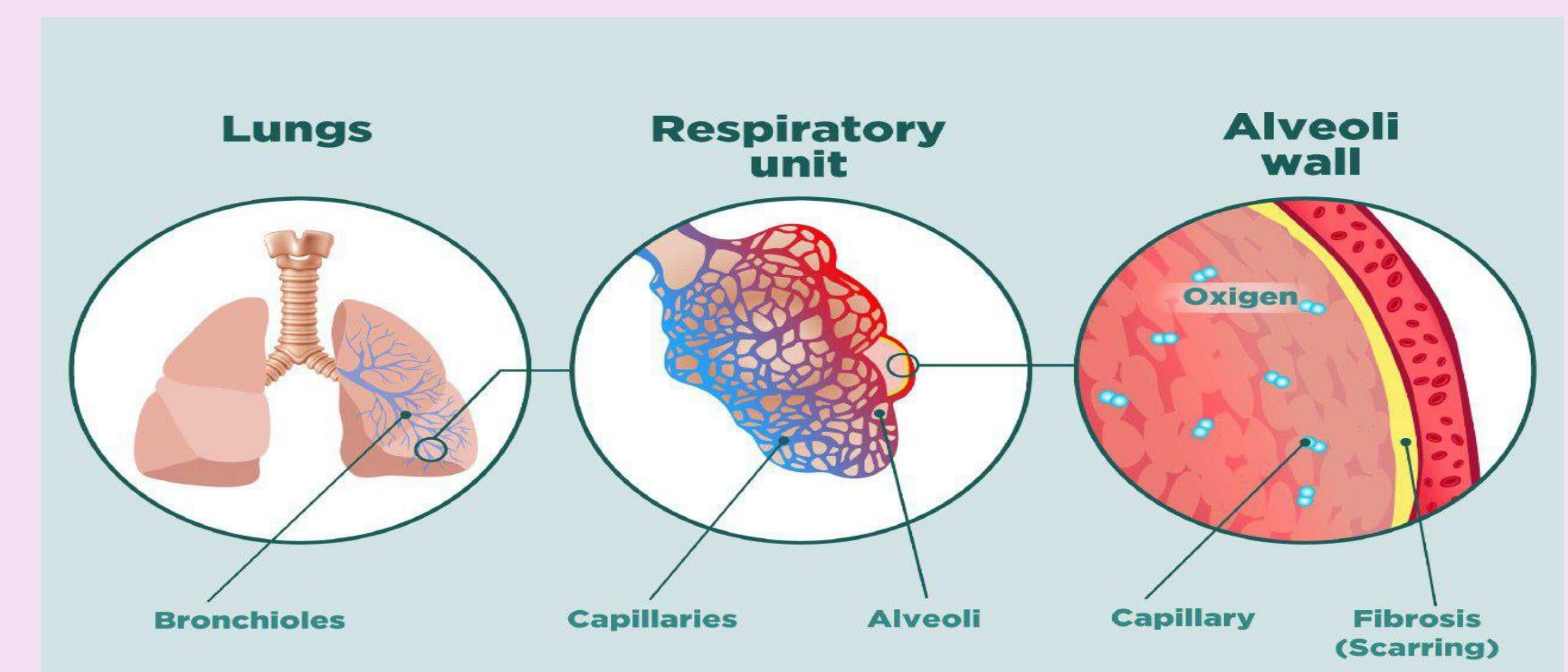
Data presented as mean (SD), Student’s t-test for parametric data (distance covered), Wilcoxon signed rank test for non-parametric data (rest) and McNamer for proportions. 6MWT (6 Minute Walk Test). Adopted from et all vijayan.³

Discussion

- when an injury to the lungs sparks an aberrant healing response, the body produces just the appropriate amount of tissue to repair the damage. However, in patients with interstitial lung diseases, the repair process goes awry, resulting in scarring and thickening of the tissue surrounding the air sacs (alveoli). It becomes more difficult for oxygen to enter your bloodstream as a result of this.
- The effect of the face mask on oxygen saturation in those patients could be due to the addition of a physical barrier rather than the deficiency in their alveoli.⁴

Conclusion

- At rest or during physical activity, facemasks had no effect on oxygenation or ventilation on general adult population.
- At rest and when walking briskly, neither the cloth nor the surgical masks caused hypoxemia (below-normal level of oxygen in your blood, specifically in the arteries) or hypercarbia (an increase in carbon dioxide in the bloodstream) In the general adult population, the risk of pathologic gas exchange impairment with fabric masks and surgical masks is near-zero.¹
- In patients with CTD-ILD, facemasks may limit functional capacity and SpO₂ during activity, so patient’s caregivers and specialists should minimize their physical activity while wearing masks.³



Adopted from et all Brody.⁵

References

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