



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغييرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HANAA ALY



Can Surgical masks, N95 Respirator, and M3 mask Decrease your Oxygen or Cause CO2 Retention?

Thesis

*Submitted for Partial Fulfillment of
Master's Degree in Chest Diseases*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

لَسْبَّانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

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List of Abbreviations

Abb.	Full term
ABG	Arterial blood gases
ARDS	Acute respiratory distress syndrome HCO ₃ Serum bicarbonate
CDC	Centres for disease control and prevention
CO ₂	Carbon dioxide
COVID-19	Coronavirus disease 2019
DFHFR	Disposable filtering half-facepiece respirator
FDA	Food and Drug Administration
FFRs	Filtering facepiece respirators
FiO ₂	Fraction of inspired oxygen
ICU	Intensive Care Unit
NIOSH	National Institute for Occupational Safety and Health
O ₂	Oxygen
PaCO ₂	Partial pressure of carbon dioxide
PaO ₂	Partial pressure of oxygen
PPE	Personal protective equipment
SARS-COV-2	Severe acute respiratory syndrome Corona
USA	United states of America
V/Q	Ventilation /perfusion

INTRODUCTION

The outbreak of COVID-19 has brought about some changes to our way of life. As more is learned about the virus, cities and countries look to protect citizens and allow return to normal (*Dattel et al., 2020*).

On March 11, 2020, the World Health Organization declared COVID-19 to be a global pandemic disease (*Organization, 2021*).

On April 3, 2020, the Centers for Disease Control and Prevention (CDC) in the United States recommended that individuals wear a face mask in public if they cannot distance at least six feet from others, to help prevent the transmission of COVID-19 (*Hauck et al., 2020; CDC, 2020*).

During respiration, a gas exchange occurs when oxygen is inhaled and absorbed into the body and carbon dioxide (CO₂) is exhaled. When exhaling into a mask, there is a potential to inhale a greater amount of carbon dioxide, due to the exhaled carbon dioxide being trapped between the face and mask. One symptom of an excess of carbon dioxide in the blood, or hypercapnia, is fatigue (*Dattel et al., 2020*).

We've all been wearing masks to help prevent the spread of the coronavirus. The FDA described a surgical mask as a “loose-fitting, disposable device that creates a physical barrier between the mouth and nose of the wearer and potential

contaminants in the immediate environment,” and N95 respirator as a “respiratory protective device designed to achieve a very close facial fit and very efficient filtration of airborne particles (*Food and Drug Administration, 2020*).

AIM OF THE WORK

To know whether Masks affect Oxygen and carbon dioxide level.