A study of the Relationship between Anthropometric Measures, Blood Gases, and Pulmonary Functions, in a Random Sample of Adult Healthy Egyptians

Thesis

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By:

Sherehan El Sayed Abdel Aaty
M. B., B.Ch

Supervised by

Prof. Mohammed Sherif El Bouhy

Professor of Chest Diseases
Faculty of Medicine, Ain Shams University

Dr. Gehan Mohamed El Asaal

Ass. Professor. of Chest Diseases
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة آية (32)

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Sherehan El Sayed Abdel Aaty

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List of Abbreviations

ABG	:	Arterial blood gases.
ATS	:	American thoracic society.
ATS-ERS	:	American thoracic society- European respiratory society.
BE	:	Base excess.
BMI	:	Body mass index.
cm	:	Centimeter.
°C	:	Celsius.
CO_2	:	Carbon dioxide.
COPD	:	Chronic obstructive pulmonary disease.
CT	:	Coputed tomography.
DEC	:	Decrease.
DLCO	:	Diffusing capacity of the lung for carbon monoxid.
EDTA	:	Ethylenediaminetetraacetic acid
e.g.	:	For example
ERV	:	Expiratory reserve volume.
FEF	:	Forced expiratory flow.
FEF25%	:	Forced expiratory flow at 25%
FEF25-75%	:	Forced Expiratory Flow Between 25% and 75% of Forced Vital Capacity.
FEF50%	:	Forced expiratory flow at 50%.
FEF75%	:	Forced expiratory flow at 75%.
FEV1	:	Forced expiratory volume in the first second.
FEV1/ FEV6	:	Forced expiratory volume in the first second/ Forced expiratory volume in six seconds.
FEV1/FVC	:	Forced expiratory volume in one second/Forced vital capacity.
FEV3	:	Forced expiratory volume in three seconds.
FEV6	:	Forced expiratory volume in six seconds.
FRC	:	Functional residual capacity.
Ft	:	Feet.

List of Abbreviations (Cont.)

FVC	:	Forced vital capacity.
gm	:	Gram.
H+	:	Hydrogen ions.
H2CO3	:	Carbonic acid.
H2O	:	Water.
HCO3	:	Bicarbonate.
HCO_3^-	:	Bicarbonate ion.
HRCT	:	High resolution computed tomography.
HS	:	Highly significant.
IC	:	Inspiratory capacity.
In	:	Inch.
Inc	:	Increase.
IRV	:	Inspiratory reserve volume.
Kco	:	Krogh constant
kg/m2	:	kilogram/ square meter.
kPa	:	kilopascal.
L	:	Liter.
L/min	:	Liters/Minutes.
L/S	:	Liters/Seconds.
LLN	:	Lower limit of normal.
MDI	:	Metered-dose inhaler.
MEP	:	Maximal expiratory pressure.
mEq/L	:	Milliequivalents per liter.
6MWK	:	Six minute walk test.
MID	:	Minimally important difference.
Min	:	Minute
MIP	:	Maximal inspiratory pressure.
ml	:	Milliliter.
mm	:	Millimeter.
mmHg	:	Millimeter of mercury.

List of Abbreviations (Cont.)

mmol/l	:	Millimoles per Liter.
MVV	:	Maximal voluntary ventilation.
n	:	Number.
NHANES III	:	Third national health & nutrition examination survey
NHLBI	:	National Heart, Lung, and Blood Institute
NIH	:	National institute of health.
NLHEP	:	National lung health education program.
Nor	:	Normal.
NS	:	Non significant.
O_2	:	Oxygen.
$P(A\text{-}a)O_2$	:	Alveolar to arterial oxygen gradient.
$PaCO_2$	:	Arterial carbon dioxide tension.
PaO2	:	Arterial oxygen tension.
PCO_2	:	Carbon dioxide tension.
PEF	:	Peak expiratory flow
PEFR	:	Peak expiratory flow rate.
PFTs	:	Pulmonary function tests.
pH	:	Negative logarithm hydrogen ion.
PIF	:	Peak inspiratory flow.
PO2	:	Oxygen tension.
$PvCO_2$	:	Venous carbon dioxide tension.
PvO_2	:	Venous oxygen tension.
RV	:	Residual volume.
S	:	Significant.
sec	:	Second.
SaO_2	:	Arterial oxygen saturation.
SBC	:	Standardized bicarbonate.

List of Abbreviations (Cont.)

SPSS	:	Statistical package for Social Science
SD	:	Standard deviation.
So_2	:	Oxygen saturation.
SvO_2	:	Venous oxygen saturation.
TLC	:	Total lung capacity.
TV	:	Tidal volume.
units/ml	:	Units / Milliliter
+ve	:	Positive.
VC	:	Vital capacity.
-ve	:	Negative.
W/Ht	:	Waist/ height.
WC	:	Waist circumference.
WHO	:	World health organization.
WHR	:	Waist to hip ratio.
Y	:	Year.
1^{st}	:	First

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Introduction

Anthropometric measurements of human populations are considered basic information for the assessment of physical characteristics of individual within a given society. Anthropometry of the elderly, is a practical approach to evaluate their nutritional and health status, as well as Anthropometry of the adult sector is needed for biological and health aspect (***National Research Center, 2008).***

One of the anthropometric measures is Body Mass Index (BMI) which is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults ***(WHO, 2006).*** In addition, central obesity is measured by increase in waist circumference or waist-to-hip ratio (WHR) (***Montague & O'Rahilly, 2000).***

In Several studies that examined the relation between obesity and lung function used body mass index (BMI) as a measure of overall adiposity ***(Maiolo et al., 2003).***

Obesity cause various effect on respiratory function in the form of alteration in the respiratory mechanics, decreased respiratory muscle strength, decrease in the pulmonary gas exchange and a limitation in the pulmonary function test. These changes in the lung function tests are due to the accumulation of adipose tissue in the abdominal cavity and the chest wall (***Costa et al., 2008)***.