Assessment of Pulmonary Functions in School Students in Shubra District

Thesis

Submitted for Partial Fulfillment of Master Degree in Pediatrics

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2016

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

﴿وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا﴾

صدق الله العظيم

سورة النساء آية (١١٣)

First thanks to **ALLAH** *to whom I relate any success in achieving any work in my life.*

It is my pleasure to express my deepest thanks and gratitude to ***Prof. Dr. Karima Ahmed Abd Al-Khalek,*** *professor of pediatrics, Ain Shams University for her great help and support, kind supervision and continuous encouragement.*

I am truly indebted to ***Prof. Dr. Eman Mahmoud Fouda,*** *professor of pediatrics, Ain Shams University for her meticulous supervision, encouragement, unlimited assistance and guidance during this work and whatever have been said, is little to express my respect and thanks to her*

I would like also to express my profound thanks and gratitude to ***Dr. Nayera Samy Mostafa,*** *Assistant professor of Community Medicine, Ain Shams University for her constructive guidance, remarkable effort, and scientific assistance.*

I will always be grateful to ***my father*** *and* ***my mother*** *for their help, support, and encouragement and whatever has been said, is little to express my respect and thanks to them.*

It is my pleasure to express my genuine thanks to my husband Engineer ***Mahmoud Fawzy Ahmed*** *for his great help and support and continuous encouragement, without his support this study wouldn't have been possible.*

I will always be grateful to ***Sara Ahmed Abd-El Ghaffar*** *for her help and continuous encouragement, my deepest thanks for her.*

I am very grateful to ***my brothers*** *and* ***sister Awatif, Mohammed, Sayed, Mahmoud Badry*** *for their help and encouragement.*

My sincere thanks are due to ***Mrs. Salwa Mahmoud Aref*** *health instructor at school for her assistance in performing the pulmonary function tests at school.*

I am very grateful to the students, the school principal and their teachers who participated in the study.

Shaimaa Badry Abd-Elzaher

*"To my dear **Father** for his help and to my beloved **Mother** for her care and support*

*And To my dear **Husband** who was and still supporting me in all my hard times and to my beautiful daughter **Hafsa***

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List of Abbreviations

Abb.	Full term
ADHD	Attention deficit hyperactivity disorder
AFD	Agence Française de Développement
ATS	American Thoracic Society
CAIP	Cairo Air Improvement Project
CAPMAS	Central Agency for Public Mobilization and Statistics
CO	Carbon monoxide
COPD	Chronic obstructive pulmonary disease
DEP	Diesel exhaust particles
EEAA	The Egyptian Environmental Affairs Agency
EIB	European Investment Bank
EME	The Egyptian Ministry of Environment
EPAP II	The Second Egypt Pollution Abatement Project
ERS	European Respiratory Society
ETS	Environmental tobacco smoke
FEF	forced expiratory flow
FET	Forced Expiratory Time
FEV1	forced expiratory volume in first second
FRC	Functional Residual Capacity
FVC	Forced vital capacity
GCMA	The Greater Cairo Metropolitan Area
GST	Glutathione S-transferase
GSTM1	Glutathione S-Transferase Mu 1
GSTP1	Glutathione S-transferase pi 1
GSTT1	Glutathione S-Transferase theta 1
H2SO4	Sulfuric acid
JICA	The Japan International Cooperation Agency
LLN	Lower Limit of Normal
MVV	Maximal voluntary ventilation
NO2	Nitrogen dioxide
NPC	The Noise Pollution Clearinghouse
O_3	Ozone
OSAS	Obstructive Sleep Apnea Syndrome
PFT	Pulmonary function test
PM	Particulate matter
RV	Residual Volume

SD	Standard deviation
SHS	Second Hand Smoke
SO2	Sulphur dioxide
TLC	Total lung capacity
UNDP	United Nations Development Program
USAID	The United States Agency for International Development
WHO	World Health Organization

Abstract

As regard living in main road as a risk factor for abnormal pulmonary functions, were recorded **(19%)** had obstructive pulmonary functions and **(25%)** had restrictive pulmonary functions.

As regard proximity of home to coffee shop were recorded (**17%)** had obstructive pulmonary functions and **(31%)** had restrictive pulmonary functions.

As regard presence of pets at home, were recorded **(26%)** had obstructive pulmonary functions and **(32%)** had restrictive pulmonary functions

As regard students with known history of bronchial asthma were recorded **(72%)** had obstructive spirometric pulmonary functions and **(14%)** had restrictive spirometric pulmonary functions.

Key words: Sulphur dioxide- Second Hand Smoke - Maximal voluntary ventilation

INTRODUCTION

Mounting evidence suggests that air pollution contributes to the large global burden of respiratory and allergic diseases, including asthma, chronic obstructive pulmonary disease, pneumonia, and possibly tuberculosis. ***(Laumbach et al., 2012)***

Exposure to ambient air pollution is related to several health outcomes such as reduced lung function, exacerbation of asthma and increased acute and chronic respiratory/allergic diseases in children. ***(Altug et al., 2014)***

Every year 3.3 million premature deaths from the effects of air pollution worldwide, ambient outdoor and indoor air pollution contributed to the deaths of an estimated 7.7 million people in 2012, including over 660,000 children. ***(Simoni et al., 2015)***

Children might be more likely to be affected by inflammation produced by air pollutants, as their airways are smaller in diameter. Children are sensitive to the effects of air pollution due to several other physiological reasons . ***(WHO, 2005).***

Epidemiological studies suggest that outdoor air pollution adversely affects children's lung function, which may not only harm their health now but also increase their susceptibility to respiratory and cardiovascular disease in adulthood.

Exposure to air pollutants in infancy is suspected to alter lung development, with potential long-term consequences. Maternal and childhood exposure are associated with deficits in lung function and lung function growth. Air pollution may play a role in the development of childhood asthma. ***(Goldizen et al., 2015)***

The health effects of air pollution exposure have become an area of increasing focus in the past 30 years. A growing body of evidence has demonstrated that there are serious health consequences to the community due to air pollution and that these consequences are not spread equally among the population. ***(Schwartz, 2004)***