

Study Of The Relationship Between Body Mass Index And Asthma Control In Adults

Thesis

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*To Whom, I Owe Everything
To My Father's Soul
To My Beloved Mother
To All My Brothers & Sisters*

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LIST OF ABBREVIATIONS

AHR	Airway hyper-responsiveness
ASM	Airway Smooth Muscle
ATS	American thoracic society
BAL	Bronchoalveolar lavage
BHR	Bronchial hyper responsiveness
BMI	Body mass index
C/EBPα	CCAAT/enhancer binding proteins α
COPD	Chronic obstructive pulmonary disease
COX-2	Cyclooxygenase -2
CXR	Chest X ray
EGF	Epithelial growth factor
FEF	Forced Expiratory Flow
FENO	Forced exhaled nitric oxid
FET	Forced expiratory time
FEV1	Forced expiratory volume in the first second
FGF-2	Fibroblast growth factor-2
FVC	Forced Vital capacity
G Protein	Guanine nucleotide binding protein
GM-CSF	Granulocyte–macrophage colony stimulating factor
IgE	Immunoglobulin B
IGF	Insulin like growth factor

IgG	Immunoglobulin G
IL	Interleukin
INOS	Inducible nitric oxide synthase
LPR	Late phase reaction
LTC₄	Leukotriene C ₄
LTD₄	Leukotriene D ₄
LTE₄	Leukotriene E ₄
NOS	Nitric oxide synthase
PAF	Platelet-activating factor
PDGF	Platelet derived growth factor
PEF	Peak expiratory flow
PGD₂	Prostaglandin D ₂
PGE₂	Prostaglandin E ₂
PGF_{2α}	Prostaglandin F _{2α}
RANTES	Regulated upon Activation Normal T-cell Expressed and secreted
RSV	Respiratory Syncytial viruses
RV	Residual volume
TGF-β	Transforming growth factor B
Th	T helper cell
TLC	Total lung capacity
TNF	Tumor necrosis factor
VEGF	Vascular endothelial growth factor

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Introduction

Asthma is a chronic inflammatory disease characterized by lower airway hyperresponsiveness with variable airflow limitation that can resolve spontaneously or through treatment **(Nilva et al., 2002)**. This illness is a serious public health problem worldwide and its prevalence has increased in recent decades mainly in urban areas which might be due to changes in lifestyle **(Schachter et al., 2001)**.

Various studies have shown a correlation between an increase in body mass index and asthma prevalence initially in children and recently in adults **(Akerman et al., 2004)**. Longitudinal studies have shown that obesity and the incidence of asthma increase in parallel **(Chinn, 2006)**.

Changes in the respiratory mechanics with reductions in the functional residual capacity and in the tidal volume secondary to obesity as well as a sedentary lifestyle and a limited ability to perform physical activities, all of these related to obese individuals, can cause worsening of the asthma symptoms **(Huovinen et al., 2003)**. Obesity might also increase the risk of gastro-esophageal reflux, which promotes airway hyperresponsiveness in individuals with asthma **(Shore et al., 2006)**.

Inflammatory alterations described in obese individuals have recently been mentioned as factors that might interfere with clinical manifestations of asthma in these individuals **(Beuther et al., 2007)**. The inflammatory condition unique to obese individuals, including an increase in tumor necrosis factor alpha and other pro-inflammatory cytokines, such as interleukin 4, interleukin 5 and interleukin 6, which determine the superimposition of these inflammatory mechanisms on those involved in asthma. This increases the influence on airway muscle contractility. **(Beuther et al., 2007)**.

The association between obesity and asthma control remains controversial. Various studies have shown that the association between elevated body mass index and asthma incidence is significantly stronger in women than in men **(Beckett et al., 2001)**. However, other studies have shown that obesity is a significant risk factor for the incidence of asthma in both genders **(Celedon et al., 2001)**.

(Stenius et al., 2000) found that the influence of weight loss on the pulmonary function of individuals with asthma showed an improvement in bronchial obstruction indices in those lost weight when compared to a control group of obese asthmatic patients who did not take part in the weight control program.

Aim of the work

The aim of this work is to determine whether there is a correlation between body mass index and the degree of asthma control in asthmatic patients.