

## Spirometric reference values in healthy, non-Smoking, Iraqi population

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### Abstract

**Background:** Pulmonary function test depends on a number of physiological factors as height, age, gender and race. Reference mathematical equations are used to determine a normal range of spirometric results which in turn are used clinically to determine whether the results measured in any individual fall within a range to be expected in a healthy person of the same gender, height and age.

**Objectives:** To derive the prediction equation for healthy, non smoking Iraqi subjects.

**Methods:** The study was conducted in Baghdad (IRAQ) on one hundred eighty two (182) healthy, nonsmoking subjects between 20 to 60 years of age were included in the study. The subjects included were 79 males and 103 females whose pulmonary volumes and capacities were measured by spirometry.

**Results:** The prediction equation was derived first and then the reference values were then

calculated for forced expiratory volume in 1<sup>st</sup> second (FEV1) and force vital capacity (FVC). The values for both parameters were found to be lower by about 5.58% and 6.14% in females and 4.78% and 12.65% in males, respectively, when compared to researchers done on Caucasians.

**Conclusion:** Pulmonary function test reference values and prediction equations for both sexes between the ages of 20-60 years were derived for a sample of healthy, nonsmoking, Iraqi population. A considerable difference was found between prediction equations and reference values obtained in present study compared with other studies conducted in western countries.

**Keywords:** FEV1, FVC, Spirometry, Iraqi subjects

IRAQI J MED SCI, 2009; VOL.7 (1): 86-95

### Introduction

Spirometry is the most frequently performed lung function test. Pulmonary function variables depend on height, age and gender. There is evidence of considerable variations in pulmonary function in different ethnic groups and across generations <sup>(1)</sup>. Reference formulas are used to determine a normal range of spirometric results.

The reference values so determined play an important role in establishing whether the values measured in an individual fall within a range to be expected in a healthy Person of the same gender, height and age <sup>(2,3,4)</sup>.

The most recent American Thoracic Society [ATS] <sup>(5)</sup> statement on impairment and disability secondary to respiratory disorders also acknowledges the presence of documented racial and ethnic differences. Such differences must be considered when interpreting pulmonary function tests <sup>(6)</sup>.

While some authors have described a "Plateau phase" of lung function development (9) starting from about 17 years of age to approximately 35 years of age when no lung growth takes place <sup>(2)</sup>, others have reported a decline in lung

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Received: 9<sup>th</sup> November 2008, Accepted: 13<sup>th</sup> April 2009.