Original Research Article

Cross-sectional Study on Pulmonary Function Tests among Adolescent Medical Students of VIMS, Pawapuri

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Abstract

PFTs are important tool for assessment of respiratory system. This study was conducted among 189 adolescent medicos of VIMS, Pawapuri to assess the pulmonary function tests. It was observed that the difference in FVC for males and females was not significant (p=0.16). FEV_1 for males and females were different significantly (p=0.02). However, FEV_1/ FVC % was similar in males and females (p=0.76). PEFR was different in males and females but this difference was not significant (p=0.053). This provides baseline data of PFTs for adolescent age group in this area.

Key words

Pulmonary Function Tests, Medical Students, Adolescents, Bihar.

Introduction

Pulmonary function tests have been used as tool for physiological assessment. But, now they are being increasingly used for assessment of respiratory system regarding airway obstruction and functional degradation. They are also used to assess the response of drugs [1]. Factors which affect PFTs have changed over the course of time, mainly air pollution level, diet and anthropometric profile [2]. Hence, periodic assessment of PFTs is essential to outline the variations over time, in different groups and geographical locations [3].

Different studies have been conducted in various parts of India which have established baseline for

PFTs. Because of differences in methodology, study population and sample size, it is difficult to generalize the findings to any population [4]. Study has not been conducted in this part. Hence, this study was proposed.

Aim and objectives

The present study was done to study the pulmonary function tests among adolescent medical students of VIMS, Pawapuri, Bihar.

Materials and methods

The present study was cross sectional descriptive in nature conducted in the department of Physiology, VIMS, Pawapuri between February – April 2015.

Study subjects included medical students between 17-19 years of age. Students absent on the day of data collection and those refusing to participate were excluded. Detailed history and clinical examination of study subjects was done and those having chronic history or clinical findings of respiratory illness were excluded from the study. A total of 189 students were included in the study.

Appropriate institutional approval was taken for conducting this study. Consent was taken from all the participants. Students reporting to physiology department for practical classes were apprised about the purpose and importance of this study. They were told about the spirometry procedure and how to conduct it. They were motivated to put maximum effort. Few practice runs were done and then, three satisfactory runs were performed with an interval of 3-5 min. in between each run. Highest value among these was included for analysis.

The data was coded and entered in Microsoft Excel 2007, cleaned and analyzed by using SPSS version 16.0. Categorical variables were summarized as percentage while continuous variables were presented as Mean ± SD. Appropriate statistical test was done to calculate the significance.

Results and Discussion

The present study was conducted among 189 medical students studying at VIMS, Pawapuri in the age group of 17-19 years.

Table - 1 shows that the average age for males was 17.8±1.3 and for females, it was 17.4±1.4 and the difference was not significant (p=0.17). Height and weight for males and females were different (p=0.00). FVC for males was 3.5±1.0 and for females, it was 2.9±1.7 which was not significant (p=0.16). FEV_1 for males (3.3±1.3) and females (2.6±1.5) were different significantly (p=0.02). However, FEV_1/ FVC % was similar in males and females (p=0.76). PEFR was different in males and females but this difference was not significant (p=0.053).

Table - 2 shows the predicted and obtained PFTs. Significant difference was seen in FVC (p=0.01) and PEFR (p=0.00) for males and PEFR (p=0.00) for females (**Figure – 1**).

Sumangli, et al. [5] conducted a study on 200 healthy adolescents. They observed that lung volumes appear to be 5 to 10% less than the predicted values and especially the PEFR is significantly less in both males and females of adolescent age group irrespective of height.

Doctor, et al. [6] found in Gujarat that FVC, FEV and PEFR were found to be statistically significant in males and females. For FVC and FEV, highest correlation was found with age in girls and height in boys. For FEV %, significant negative correlation was found with age and height in both sexes, but positive correlation was found with surface area. Similarly, PEFR showed highest correlation with surface area in boys and girls. Sonappa, et al. [7] found that the India-resident children had significantly lower FEV_1 and FVC than UK-Indian children (P<0.0005). However, there were no differences in FEV_1 and FVC between Indian-urban and UK-Indian children. There were, however, significant reductions of z scores in both FEV1 and FVC (with no difference in FEV1/FVC) in Indian-

semiurban and Indian-rural children, respectively, when compared with Indian-urban children (P<0.0005).

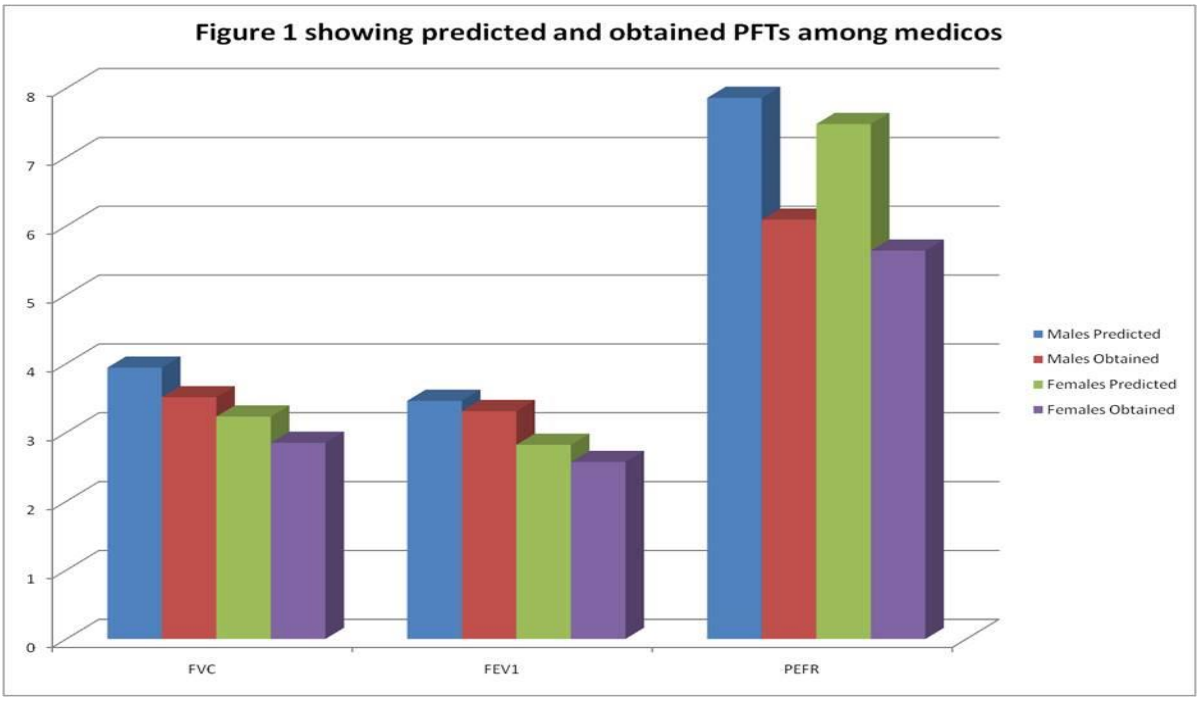
The findings of the present study are in line with other studies conducted in this regard. It is seen that there is no major change in the pattern of PFTs as compared to other places. This study provides references for the adolescent age group and variability in different functions according to gender.

Table – 1: Distribution of respondents according to physical profile and PFT findings.

Variable	Male	Female	Significance
Age (in years)	17.8±1.3	17.4±1.4	t=1.38, p=0.17
Height (in cm.)	166.9±5.1	161.2±4.7	t=7.76, p=0.00
Weight (in Kg.)	59.2±4.3	53.1±5.7	t=8.26, p=0.00
FVC(L)	3.5±1.0	2.9±1.7	t=1.39, p=0.16
FEV_1(L/S)	3.3±1.3	2.6±1.5	t=2.33, p=0.02
FEV_1/ FVC %	84.9±6.9	87.5±5.8	t=0.29, p=0.76
PEFR (L)	6.1±0.7	5.6±1.5	t=1.96, p=0.053

Table – 2: Predicted and obtained PFTs among males and females.

Gender	PFT	Predicted	Obtained	Significance
Male	FVC	3.94	3.51	t= -2.8, p=0.01
	FEV_1	3.46	3.31	t= -0.7, p=0.46
	PEFR	7.86	6.09	t= -16.2, p=0.00
	FEV_1 / FVC%	85.96	84.96	t= -0.92, p=0.36
Female	FVC	3.23	2.85	t= -1.4, p=0.16
	FEV_1	2.82	2.57	t= -1.1, p=0.29
	PEFR	7.48	5.64	t= -7.8, p=0.00
	FEV_1 / FVC%	85.96	87.46	t= 1.7, p=0.10



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