

**“EFFECT OF TYPE 2 DIABETES MELLITUS ON DYNAMIC
PULMONARY FUNCTION TESTS”**

By

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Under the guidance of

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LIST OF ABBREVIATIONS USED

ADA	American diabetic association
AGEs	Advanced glycosylation end products
BP	Blood pressure
BSA	Body surface area
BMI	Body mass index
DBP	Diastolic blood pressure
FBS	Fasting blood sugar
FEV1	Forced expiratory volume in one second
FEV1%	Percentage of forced expiratory volume in one second
FRC	Functional residual capacity
FVC	Forced vital capacity
GDM	Gestational diabetes mellitus
GOD-POD	Glucose oxidase and peroxidase
HDL	High density lipoprotein
IC	Inspiratory capacity
IFG	Impaired fasting glucose
IRV	Inspiratory reserve volume
Kg/m ²	Kilograms/square meter
LDL	Low density lipoprotein
lt/min	Liter/minute
mg	milligrams
min	Minute
ml	Milliliter
mm	millimeters

mmHg	Millimeters of mercury
MEP	Maximum expiratory pressure
MIP	Maximum inspiratory capacity
MODY	Maturity onset diabetes mellitus of young
MVV	Maximum ventilatory volume
OGTT	Oral glucose Tolerance test
PEFR	Peak expiratory flow rate
PPBS	Post prandial blood glucose
PR	Pulse rate
RR	Respiratory rate
SD	Standard deviation
SBP	Systolic blood pressure
TLC	Total lung capacity
VC	Vital capacity
W/H ratio	Waist/Hip ratio
WHO	World health organisation

ABSTRACT

Background & objective:

The purpose of this study was to evaluate pulmonary functions in patients with type 2 diabetes mellitus and to determine their correlations with anthropometric profile, glycaemic control, and duration of diabetes.

Material & methods:

Forty type2 diabetic patients, aged 30-60years, with diabetic duration of 1-20 years, were included in the study. Type2 diabetic patients were taken from Diabetic clinic of B.L.D.E.A.'s Shri B. M. Patil Medical College, Hospital and Research Centre, Bijapur, by applying inclusion & exclusion criteria using random sampling method. Detailed anthropometric and physiological datas were collected, spirometry was performed and Forced vital capacity (FVC), Forced expiratory volume in 1 second (FEV1), & FEV1% are recorded. Peak expiratory flow rate (PEFR) and Maximum expiratory pressure (MEP) were recorded by Wright's Peak flow meter & Modified Black's apparatus.. And the results were compared with age and sex matched control (non diabetic) subjects, taken from teaching & non teaching staff of B.L.D.E.A.'s Shri B. M. Patil Medical College, Hospital and Research Centre, Bijapur. Results were analysed by calculating Mean \pm SD, using Student's t test, and Pearson correlation.

Results:

There is significant increase in basal pulse rate (3beats/min) and systolic blood pressure(8mmHg) in diabetic individuals compared to control group. Possible mechanism may be due to parasympathetic dysfunction. All the respiratory parameters are reduced in type2 diabetic patients compared to control of which FEV1, FEV1%, & MEP show highly significant reduction ($p=5.953E-06$, $4.19E-07$, $1.206E-06$ respectively for FEV1, FEV1%,& MEP). Lung functions are negatively correlated with glycaemic status, and duration of diabetes. ($r=-0.390$, -0.342).

Interpretation & conclusion:

The present study shows reduced dynamic lung function parameters like (FVC, FEV1, FEV1%, PEFr, & MEP) in type2 diabetes mellitus. Lung function parameters are negatively correlated to glycaemic status and duration of diabetes. And when we compared sex wise percentage decrease of lung parameters in diabetics & non diabetics more decrease is found in female diabetics compared to male diabetics. As MEP is significantly reduced in study group we attribute this reduction in lung function tests to respiratory muscle weakness and glycaemic control. Therefore good glycaemic control & breathing exercises to strengthen the respiratory muscle may improve the lung function tests.

Key words: Type2 diabetes; FVC (ml); FEV1(ml); FEV1%; PEFr(lt/min); MEP (mmHg) ;Lung function tests.

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