Relation between Serum Testosterone level in COPD Patient – an analytical study at RMCH

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Introduction

- Chronic Obstructive Pulmonary Disease (COPD) is a major public health problem.
- On the basis of epidemiologic data, by 2020, COPD will be the third leading cause of death worldwide and the fifth leading cause of disability.
- In Bangladesh, prevalence of COPD in after 40 years of age is 21.24% & general population is 4.3%.

COPD is a systemic disease, may present with a number of extra pulmonary symptoms including:

- Cachexia,
- Skeletal muscle dysfunction along with decrease muscle mass
- Hypogonadism.

COPD and Hypogonadism

- Prevalence of hypogonadism in men with COPD can range from 22% to 69%
- The potential mechanisms for this endocrine dysfunction:
  - Hypoxaemia,
  - Hypercapnia,
  - Systemic inflammation (persistent low grade)
  - The use of glucocorticoids.
  - Atrophy of Leydig cells.

Rationality

- COPD is associated with skeletal muscle dysfunction and less muscle bulk which is more with low testosterone.
- Low testosterone level may be a reversible risk factor for functional disability and deterioration with COPD.
- Testosterone therapy on exercise capacity and health-related quality of life outcomes in COPD patients

Objectives

General Objectives

- To find out the association of serum Testosterone level with COPD patient.

Specific Objectives

- To assess the status of serum Testosterone in case group.
- To assess the status of serum Testosterone in control group.
- To determine the socio-demographic characteristics of study population.
- To ascertain relationship between serum Testosterone level with COPD

Materials and Methods

1. Study Design:

- Case-control study

2. Place of Study:

- Department of Medicine in Rajshahi Medical College Hospital.

3. Study Period:

- Six months period.

4. Study population:

- Patient suffering from COPD and were admitted in hospital inpatient department of Medicine of RMCH.

5. Sampling Method:

- Purposive convenient sampling.

6.Sample size: 40 sample were collected as case and 40 sample were collected as age matched control.

Selection criteria

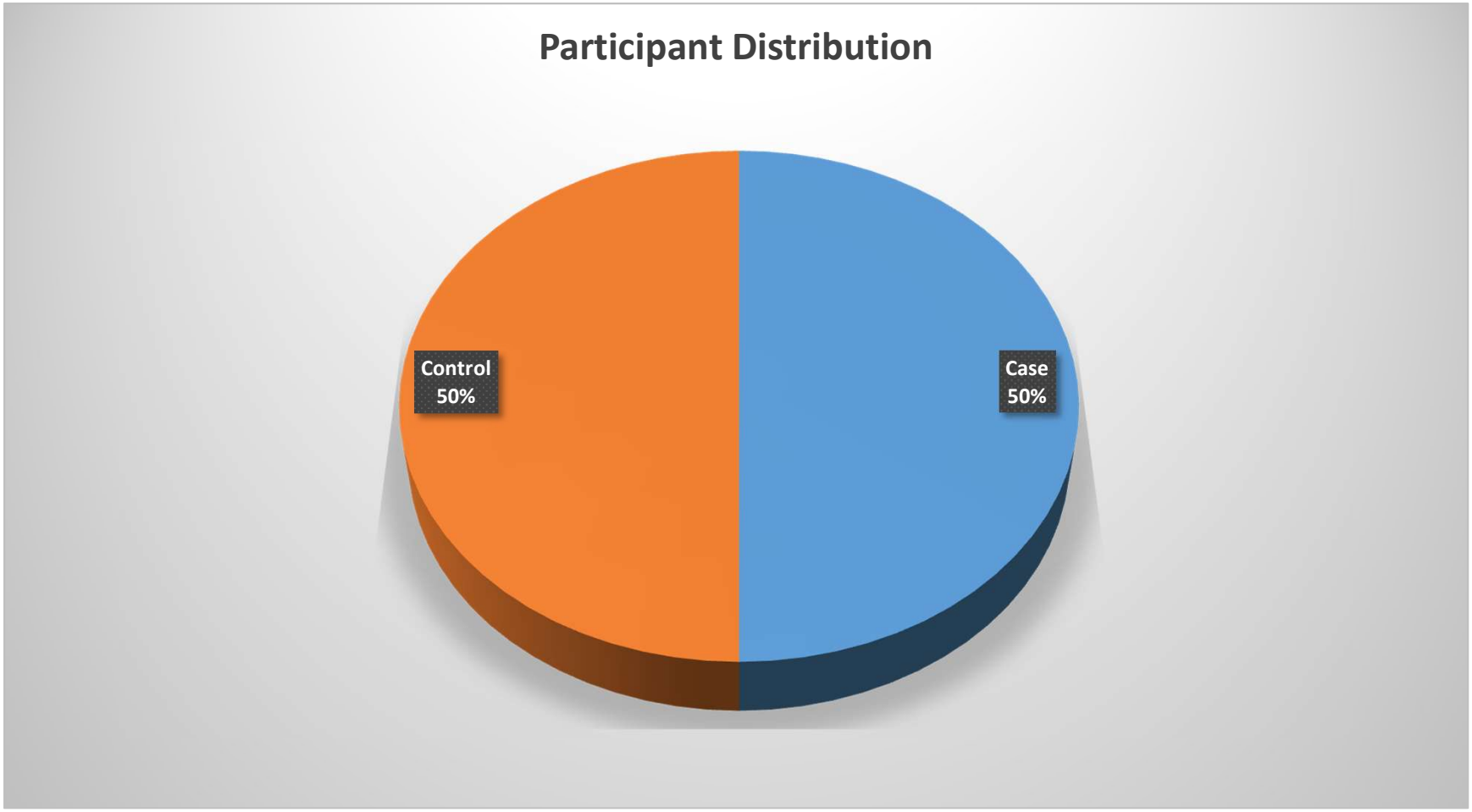
Inclusion criteria:

- Men who are diagnosed as a case of COPD
- Severity grade III according to GOLD criteria
- Age 45-60 years
- Who have given informed written consent.

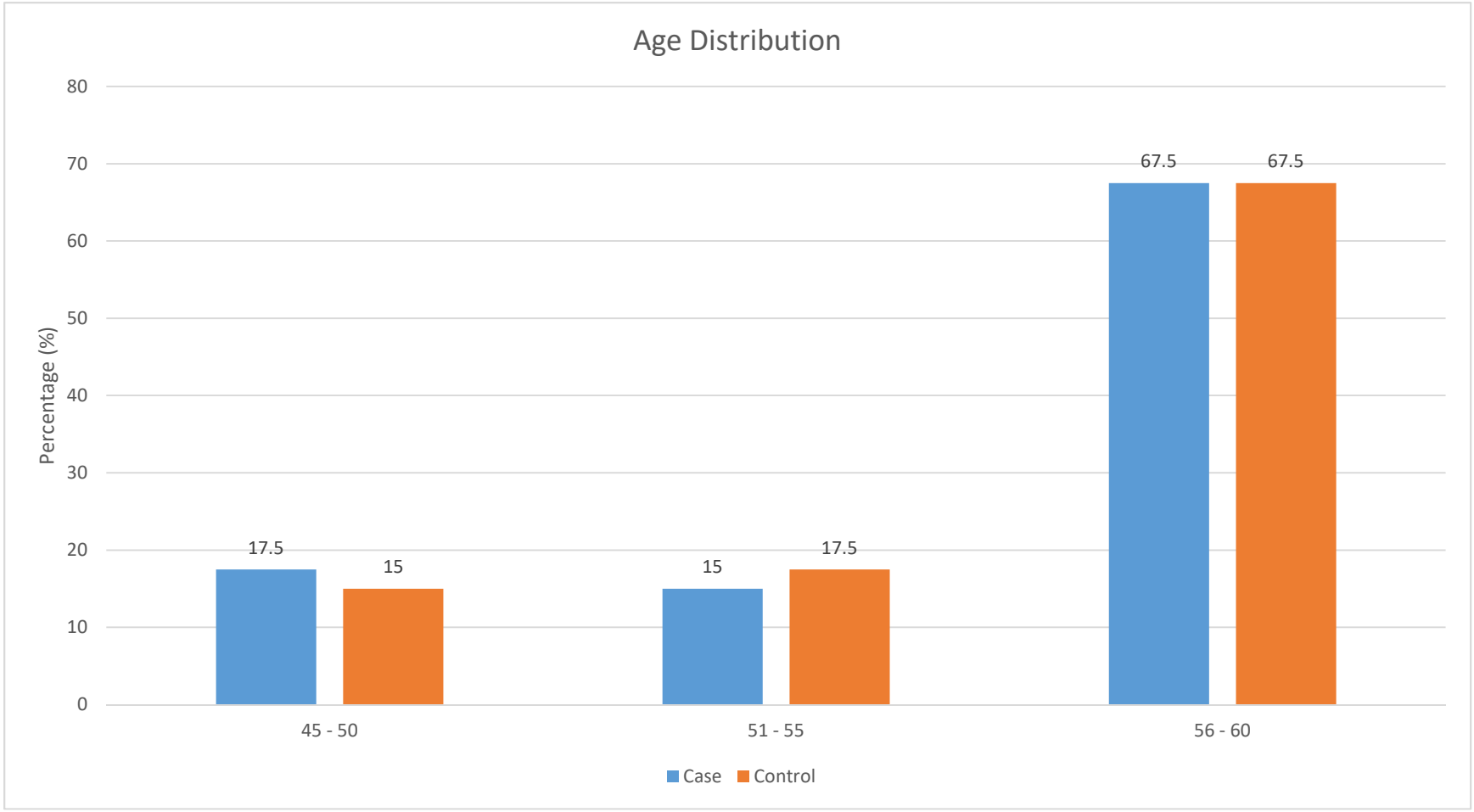
Exclusion criteria:

- Who have not given informed written consent.
- Co-morbid illnesses causing reduced testosterone level.
- Patient taking testosterone therapy due to any reason for past 3 months
- Comorbid disease: DM, Thyroid disease, CKD.

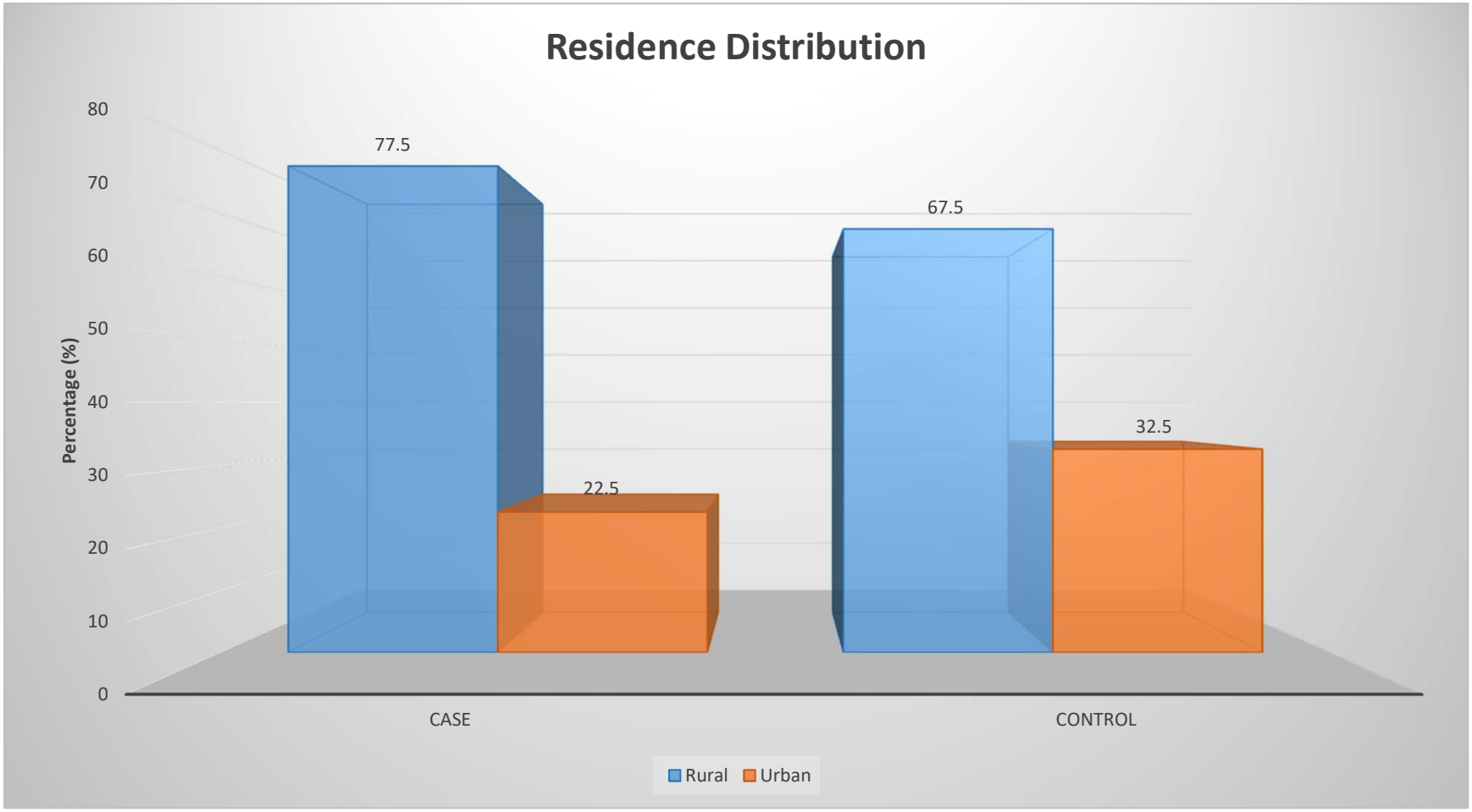
Result



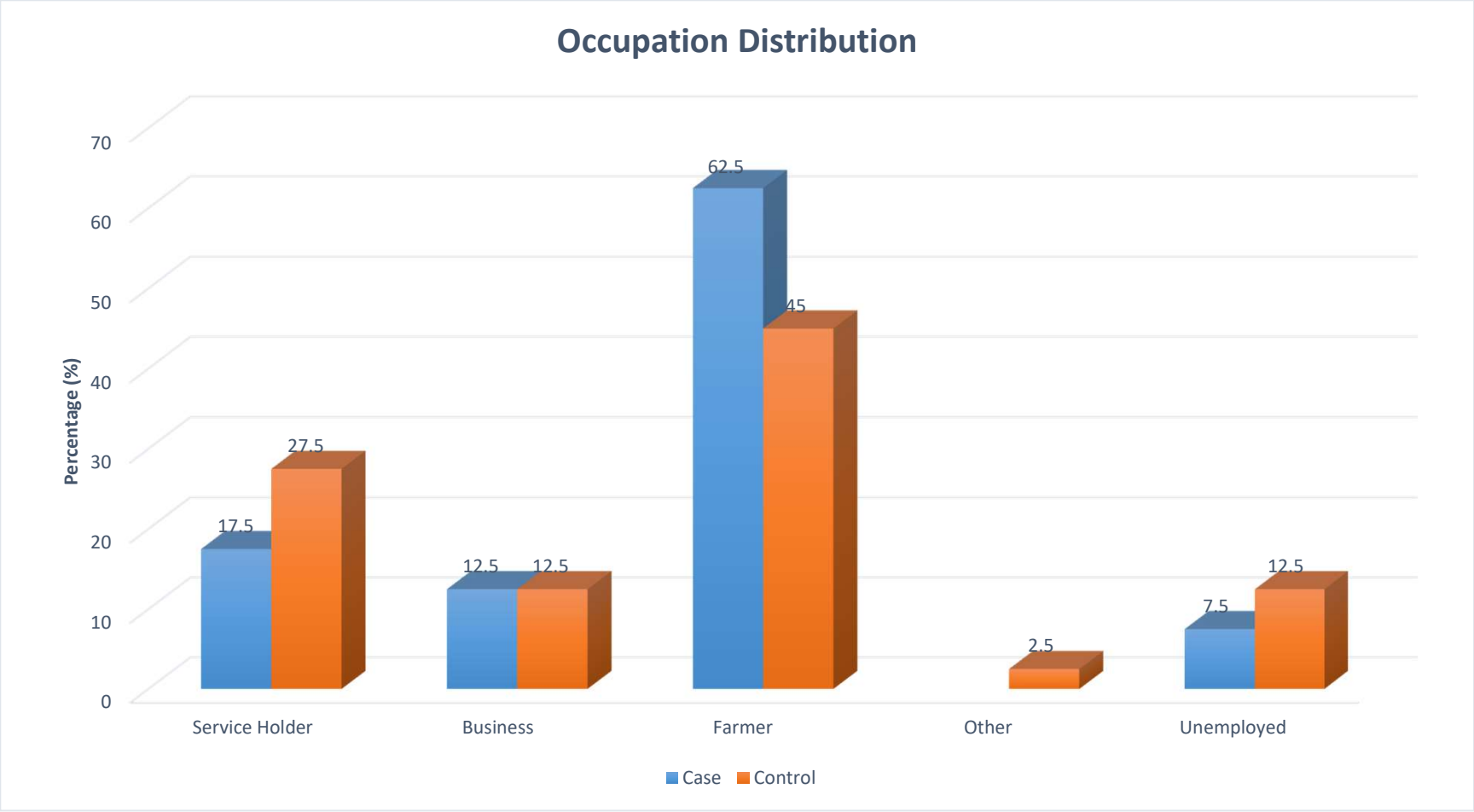
Mean age of cases was 56.20±3.90 years and control was 56.42±3.86 years. Majority were aged between 56 – 60 (67.5%)years.



Majority patients from rural area in both cases (77.5%) and control (67.5%)



Majority patients are farmer from both case (62.5%) and control (45%)



BMI of the patients

- BMI of cases was 23.04±2.96 kg/m^2 and control was 24.14±3.44 kg/m^2.
- 7.5% patients were underweight,
- 58.8% were normal weight and
- 33.8% patients were overweight.

Distribution was similar across groups ($p>0.05$).

Smoking history

- All of the cases were smokers (100%),
- whereas 15% control were smokers.

The difference was statistically significant ($p<0.001$).

Testosterone in COPD

Serum Testosterone (nmol/L)	**Case (n=40) N (%)**	**Control (n=40) N (%)**	**Total (N=80) N (%)**	**P value***
Low	21	11	32	.04
Normal	19	29	48	

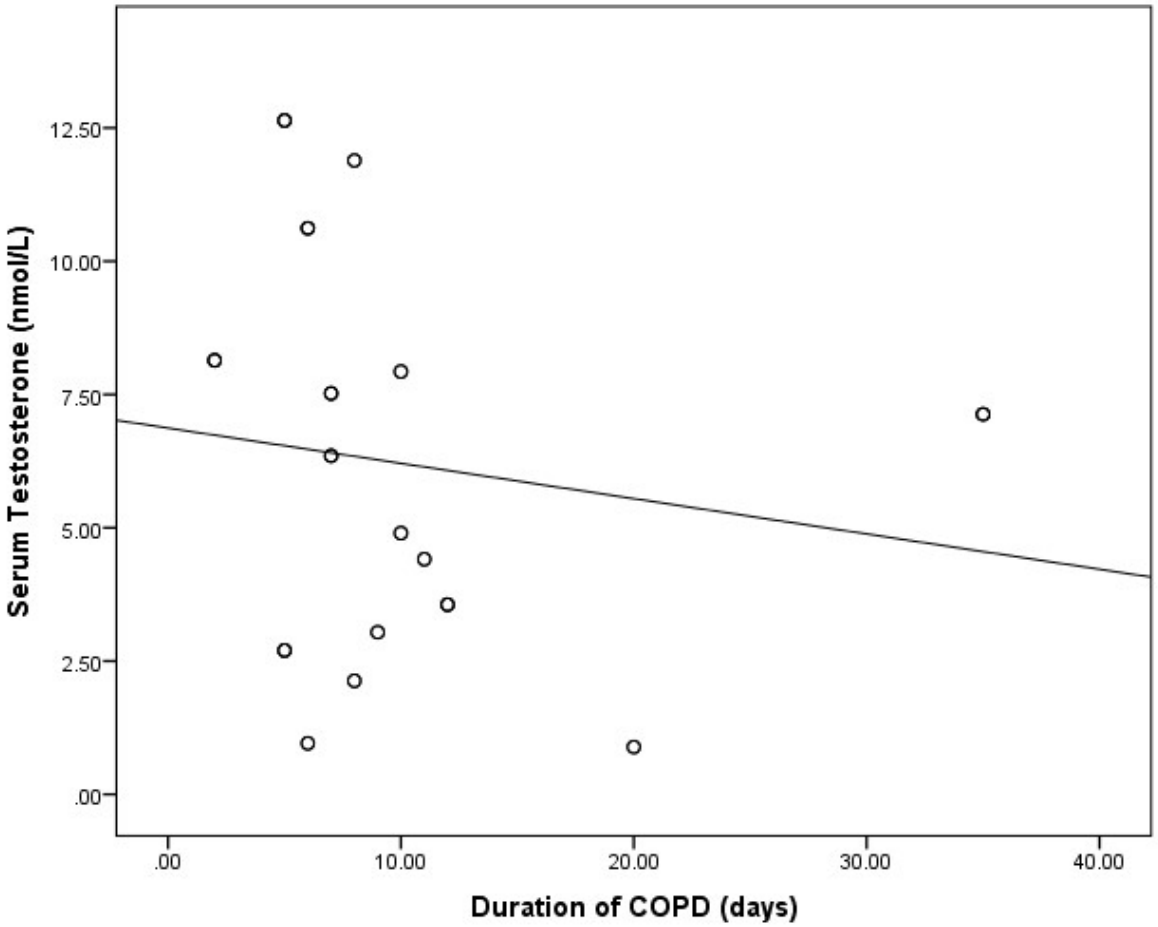
Number of Low serum testosterone population was higher in COPD group than control ($p<0.05$).

Serum testosterone level in respondents

	Case (n=40)	**Control (n=40)**	**Total (N =80)**	**P value**
	n (%)	n (%)	N (%)	
Serum Testosterone (nmol/L)	**6.20±3.59**	**11.67±11.70**	**8.93±9.03**	**0.006**

Serum testosterone level declined with increasing duration of COPD

(r = -0.150, p = 0.350).



Discussion

- In this study found, significant differences in serum levels of sex hormones in patients with COPD and age matched healthy males.
- In addition there was a higher prevalence of hypogonadism in the COPD patients than the control subjects (22% versus 11%).
- In this study a decline in serum testosterone level was noted with increasing duration of COPD.

Conclusion

- Hypogonadism is highly prevalent in the COPD patients particularly related to the severity of the airway obstruction.
- Regular screening COPD patients for the sex hormone level seem justified.
- Future research in this area on the role of testosterone replacement therapy in the prevention of hypogonadism and in delaying muscle weakness in COPD patients.

Limitation of the study

- This was a single center study
- Sample size was not representative to generalized the findings
- Long term follow up was beyond the scope of this study
- Female were not included in this study

Thank you