

Evaluation of the Incidence of Low Testosterone levels in young male adults with Severe Obesity – Single Centre Study from India.

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- **IFSO APC 2022 Philippines**
- **ASMBS 2023 , Las Vegas , USA**

Presenter :Paper Presentation in International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) world congress ,LONDON
Paper presentation in IFSO APC 2022 Philippines

I have no potential conflict of interest to report



MAGNITUDE OF OBESITY IN YOUNG ADULTS ...

Global estimate suggests that **almost 2.3 billion children and adults are overweight and obese.**


If the current trend continue **2.7 billion adults** could be living with overweight or obesity **by 2025.**

World-heart-federation.org

David Sarwer

Original Contributions | [Open Access](#) | [Published: 07 November 2022](#)

2022 American Society of Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) Indications for Metabolic and Bariatric Surgery

[Dan Eisenberg](#) , [Scott A. Shikora](#), [Edo Aarts](#), [Ali Aminian](#), [Luigi Angrisani](#), [Ricardo V. Cohen](#), [Maurizio de Luca](#), [Silvia L. Faria](#), [Kasey P.S. Goodpaster](#), [Ashraf Haddad](#), [Jacques M. Himpens](#), [Lilian Kow](#), [Marina Kurian](#), [Ken Loj](#), [Kamal Mahawar](#), [Abdelrahman Nimeri](#), [Mary O'Kane](#), [Pavlos K. Papasavas](#), [Jaime Ponce](#), [Janey S. A. Pratt](#), [Ann M. Rogers](#), [Kimberley E. Steele](#), [Michel Suter](#) & [Shanu N. Kothari](#)

[Obesity Surgery](#) **33**, 3–14 (2023) | [Cite this article](#)





Surgery for Obesity and Related Diseases

Volume 11, Issue 3, May–June 2015, Pages 643–651



Integrated health original article

Sexual functioning and sex hormones in men who underwent bariatric surgery ☆

[David B. Sarwer](#) Ph.D. ^{a b}  , [Jacqueline C. Spitzer](#) M.S.Ed. ^a, [Thomas A. Wadden](#) Ph.D. ^a, [Raymond C. Rosen](#) Ph.D. ^c, [James E. Mitchell](#) M.D. ^d, [Kathy Lancaster](#) B.A. ^d, [Anita Courcoulas](#) M.D., M.P.H., F.A.C.S. ^e, [William Gourash](#) M.S.N., C.R.N.P. ^e, [Nicholas J. Christian](#) Ph.D. ^f

A Review of the Relationships Between Extreme Obesity, Quality of Life, and Sexual Function

[David B. Sarwer](#) , [Megan Lavery](#) & [Jacqueline C. Spitzer](#)

[Obesity Surgery](#) **22**, 668–676 (2012) | [Cite this article](#)

2093 Accesses | **100** Citations | **11** Altmetric | [Metrics](#)

David Sarwer et al has already stressed on impact of obesity on sex hormones and sexual function

LUCA BUSETTO

REVIEW article

Front. Endocrinol., 18 December 2018

Sec. Obesity

Volume 9 - 2018 |

<https://doi.org/10.3389/fendo.2018.00769>

This article is part of the Research Topic
Metabolic and Endocrine Consequences of
Bariatric/metabolic Surgery

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Obesity, Male Reproductive Function and Bariatric Surgery



Angelo Di Vincenzo*



Luca Busetto



Roberto Vettor



Marco Rossato


Department of Medicine—DIMED, Center for the Study and Integrated Management of Obesity, Clinica Medica 3, University-Hospital of Padova, Padova, Italy

Luca Busetto et al has clearly stated benefits of bariatric Surgery in improving hypogonadism in males with severe obesity even though he does state that the physiology is still more complex.

MARY O KANE

Original Contributions | [Open Access](#) | [Published: 07 November 2022](#)

2022 American Society of Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) Indications for Metabolic and Bariatric Surgery


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[Obesity Surgery](#) **33**, 3–14 (2023) | [Cite this article](#)

10k Accesses | **44** Citations | **44** Altmetric | [Metrics](#)

Mary O 'Kane et al contributed and stressed on more aggressive obesity treatment in Asian population and also published guidelines for MBS in children and adolescents after evaluation by a multidisciplinary team in a specialty center.

Physical activity motives, barriers, and preferences in people with obesity: A systematic review

Aurélie Baillot , Stéphanie Chenail, Naiara Barros Polita, Mylène Simoneau, Mathilde Libourel, Evy Nazon, Eléonor Riesco, Dale S. Bond, Ahmed J. Romain

Published: June 23, 2021 • <https://doi.org/10.1371/journal.pone.0253114>

Dale Bond et al very rightly addressed weight related barriers for motivation and Physical activity in patients with severe obesity .

Low testosterone is one such barrier .

SILVIA LEITE FARIA

[Diabetol Metab Syndr](#). 2023; 15: 124.

PMCID: PMC10251611

Published online 2023 Jun 9. doi: [10.1186/s13098-023-01037-6](https://doi.org/10.1186/s13098-023-01037-6)

PMID: [37296485](https://pubmed.ncbi.nlm.nih.gov/37296485/)

Position statement on nutrition therapy for overweight and obesity: nutrition department of the Brazilian association for the study of obesity and metabolic syndrome (ABESO—2022)

[Renata Bressan Pepe](#),¹ [Ana Maria Lottenberg](#),^{02,16} [Clarissa Tamie Hiwatashi Fujiwara](#),¹ [Mônica Beyrut](#),³

[Dennys Esper Cintra](#),⁴ [Roberta Marcondes Machado](#),⁵ [Alessandra Rodrigues](#),³ [Natália Sanchez Oliveira Jensen](#),⁵

[Ana Paula Silva Caldas](#),⁶ [Ariana Ester Fernandes](#),¹ [Carina Rossoni](#),⁷ [Fernanda Mattos](#),⁸

[João Henrique Fabiano Motarelli](#),⁹ [Josefina Bressan](#),⁶ [Juliana Saldanha](#),¹⁰ [Lis Mie Masuzawa Beda](#),³

[Maria Sílvia Ferrari Lavrador](#),⁵ [Mariana Del Bosco](#),³ [Patrícia Cruz](#),¹ [Poliana Espíndola Correia](#),¹¹ [Priscila Maximino](#),¹²

[Sílvia Pereira](#),¹³ [Sílvia Leite Faria](#),¹⁴ and [Sílvia Maria Fraga Piovacari](#)¹⁵

Silvia Leite Faria et al clearly stated role of nutrition in the management of obesity including young males.

Objective: To evaluate the incidence of hypotestosteronemia in young adults with severe obesity.

HYPOTHESIS

- The incidence of low testosterone in young males is increasing and probably much higher than reported .
- To study the incidence of low testosterone in young males with severe obesity in Asian Indians (not studied/ published so far)

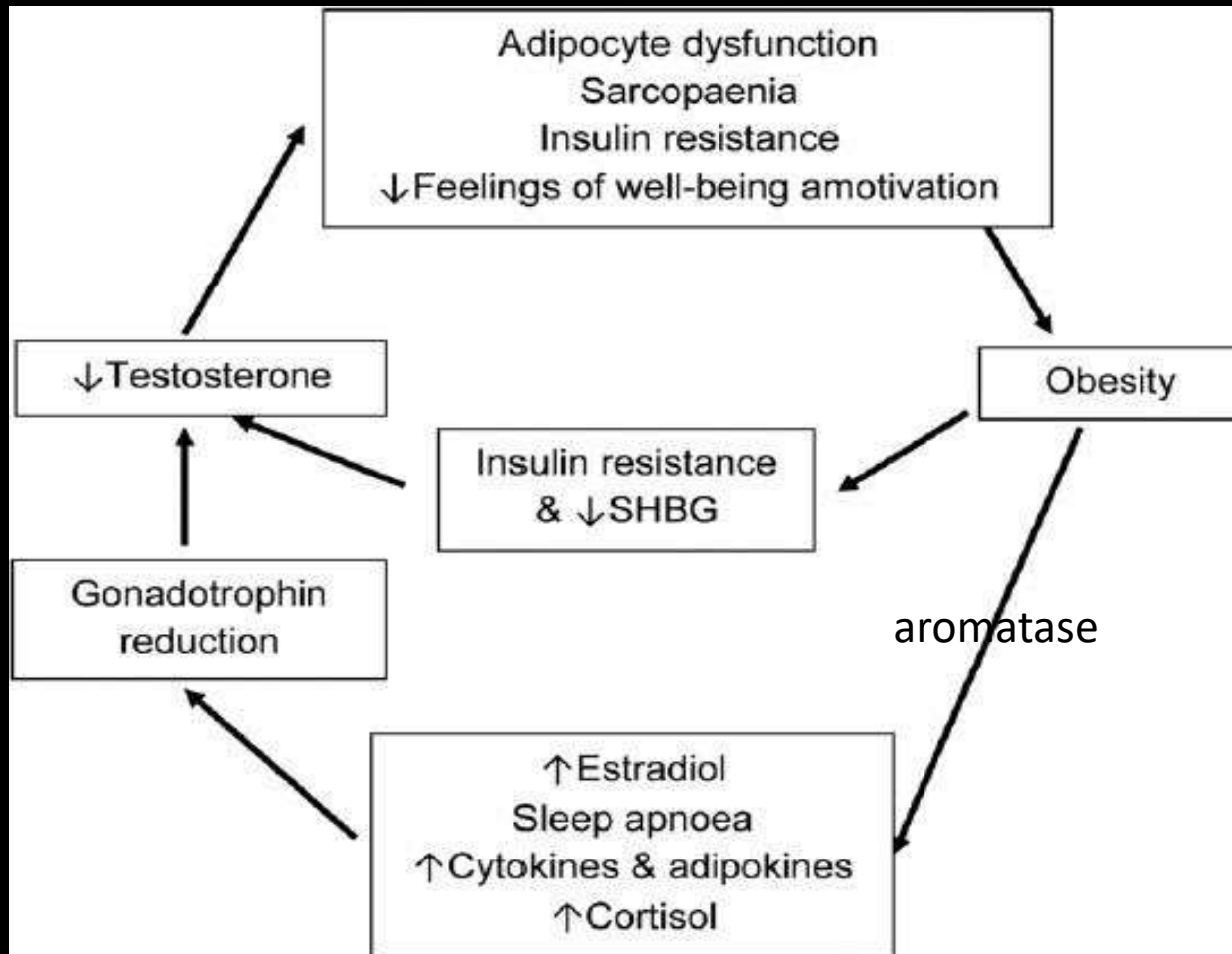
Low testosterone levels in young males with severe obesity needs to be considered as a serious health hazard similar to other obesity related conditions and can have a impact on overall quality of life.

Goals :

- Early identification , evaluation & intervention
- May add to improvement of global sexual activity and hypogonadism in young population with severe obesity

OBESITY ↔ LOW TESTOSTERONE

BILATERAL RELATIONSHIP BETWEEN OBESITY AND LOW TESTOSTERONE



PHYSIOLOGY

Impact of Low testosterone levels on physical activity

[Sci Rep.](#) 2018; 8: 957.

PMCID: PMC5772634

Published online 2018 Jan 17. doi: [10.1038/s41598-017-19104-0](https://doi.org/10.1038/s41598-017-19104-0)

PMID: [29343749](https://pubmed.ncbi.nlm.nih.gov/29343749/)

Testosterone boosts physical activity in male mice via dopaminergic pathways

[Ferran Jardí](#),¹ [Michaël R. Laurent](#),^{2,3} [Nari Kim](#),¹ [Rougin Khalil](#),¹ [Dimitri De Bundel](#),⁴ [Ann Van Eeckhaut](#),⁴

[Lawrence Van Helleputte](#),⁵ [Ludo Deboel](#),¹ [Vanessa Dubois](#),^{2,7} [Dieter Schollaert](#),¹ [Brigitte Decallonne](#),¹ [Geert Carmeliet](#),¹

[Ludo Van den Bosch](#),⁵ [Rudi D'Hooge](#),⁶ [Frank Claessens](#),² and [Dirk Vanderschueren](#)^{✉1}

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Low testosterone (T) in men, especially its free fraction, has been associated with loss of energy.

Diminished self-reported physical activity was associated to low testosterone (T) levels in a cohort of 1954 German men⁸.

Consensus statement for diagnosis of obesity, abdominal obesity and the metabolic syndrome for Asian Indians and recommendations for physical activity, medical and surgical management

A Misra ¹, P Chowbey, B M Makkar, N K Vikram, J S Wasir, D Chadha, Shashank R Joshi, S Sadikot, R Gupta, Seema Gulati, Y P Munjal; Consensus Group

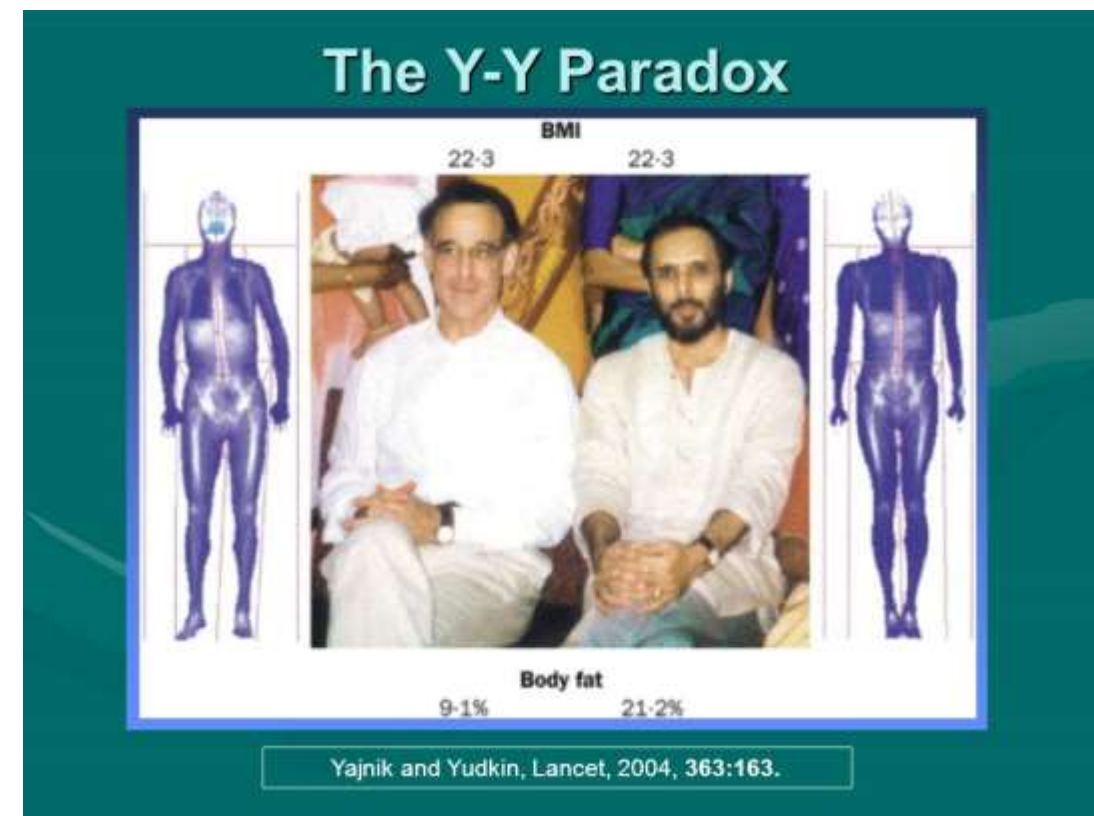
Collaborators, Affiliations + expand

PMID: 19582986

MORBID OBESITY /SEVERE OBESITY IN ASIANS
BMI > 32.5kg/m² with comorbidity
BMI > 37.5kg/m² without comorbidity

Consensus Statement

Normal BMI: 18.0-22.9 kg/m², Overweight: 23.0-24.9 kg/m², Obesity: >25 kg/m²



MATERIALS AND METHODS :

Inclusion criteria:

- Gender Male
- Age : 18-30 yrs
- BMI>32.5kg/m²
- Who visited Bariatric facility 2017- 2020

Evaluation

- Baseline BMI
- S Testosterone and Free Testosterone levels
- History and Clinical features of
 1. Gynecomastia
 2. Thinning of pubic & armpit hair
 3. Hypogonadism

Exclusions:

Other causes like endocrine causes or drugs or undescended testes, etc. which can lower testosterone levels as per the endocrinologist decision .

BASELINE CHARACTERISTICS

	N	Range		Mean	SD	Media n	IQR	
		Min	Max				Q1	Q3
Age	134	18	30	24.3	4.0	25	21	27.75
BMI	134	30	82	45.9	9.6	44	39	51
Testosterone count	134	2.5	997	289.0	167.2	266.1	184.1	360.0
Free Testosterone count	134	0.24 7	30	9.4	6.2	8.3	5.0	12.4

SIGNS AND SYMPTOMS OF LOW TESTOSTERONE LEVELS

1) GYNECOMASTIA



SIGNS AND SYMPTOMS OF LOW TESTOSTERONE LEVELS

2) THINNING OF PUBIC HAIR



NAPOLI
2023

SIGNS AND SYMPTOMS OF LOW TESTOSTERONE LEVELS

3) PSEUDO/HYPOGONADISM



SIGNS AND SYMPTOMS OF LOW TESTOSTERONE LEVELS

4) All the above + Obesity + hormonal impact of Low testosterone and free testosterone levels like ,

1. Lack of motivation
2. Sleep disorder
3. Sarcopenia
4. Fatigue
5. Less muscle mass

Integrated Team needs to identify the above since patients may be uncomfortable to present these on their own

STATISTICAL METHOD

Statistical analysis :-

Data analysis performed by using SPSS (Statistical package for social sciences) version 28:0

Qualitative data variables expressed by using frequency and Percentage (%)

Quantitative data variables expressed by using Mean and SD etc..

Spearman's correlation coefficient used to find the significance between BMI and testosterone count.

p-value < 0.05 considered as significant.

RETHINKING THE 300 number

> J Urol. 2022 Dec;208(6):1295-1302. doi: 10.1097/JU.0000000000002928. Epub 2022 Oct 25.

What Is a Normal Testosterone Level for Young Men? Rethinking the 300 ng/dL Cutoff for Testosterone Deficiency in Men 20-44 Years Old

Alex Zhu ¹, Juan Andino ¹, Stephanie Daignault-Newton ¹, Zoey Chopra ², Aruna Sarma ¹, James M Dupree ¹

Affiliations + expand

PMID: 36282060 DOI: 10.1097/JU.0000000000002928

Results: Our final analytic cohort contained 1,486 men. Age-specific middle tertile levels were 409-558 ng/dL (20-24 years old), 413-575 ng/dL (25-29 years old), 359-498 ng/dL (30-34 years old), 352-478 ng/dL (35-39 years old), and 350-473 ng/dL (40-44 years old). Age-specific cutoffs for low testosterone levels were 409, 413, 359, 352, and 350 ng/dL, respectively.

RESULTS

	n(%) (Total N = 134)
LOW TESTOSTERONE	
Below 300ng/dl	81(60.4%)
Between 300 ng/dl – 400 ng/dl	32(23.9%)
LOW FREE TESTOSTERONE	
<9.1	74 (55.2%)
9.1 -32.2	60 (44.8%)
GYNEACOMASTIA	120 (89.6%)
THINNING OF PUBIC & ARM PIT HAIR	81 (60.4%)
HYPOGONADISM	84 (62.7%)

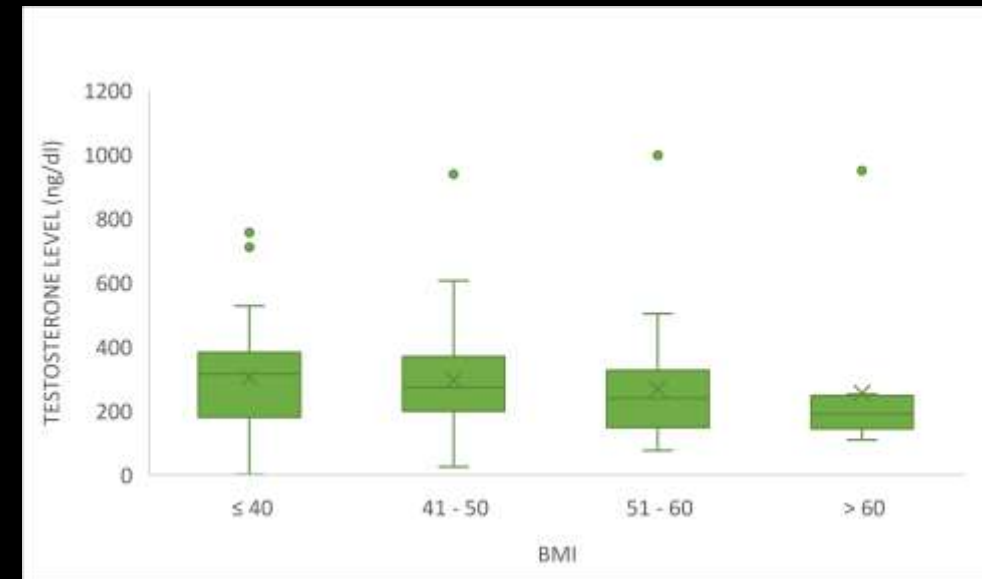
SUBGROUP ANALYSIS

Testosterone group			
		Frequency	Percent
	≤ 300	81	60.4
	301 - 400	32	23.9
	401 - 500	10	7.5
	501 - 600	5	3.7
	601 -1000	6	4.5
	Total	134	100

Descriptive statistics of Testosterone count with BMI group

There is no significant negative correlation between BMI and testosterone count.
Mean and SD of testosterone level for BMI group is as follows

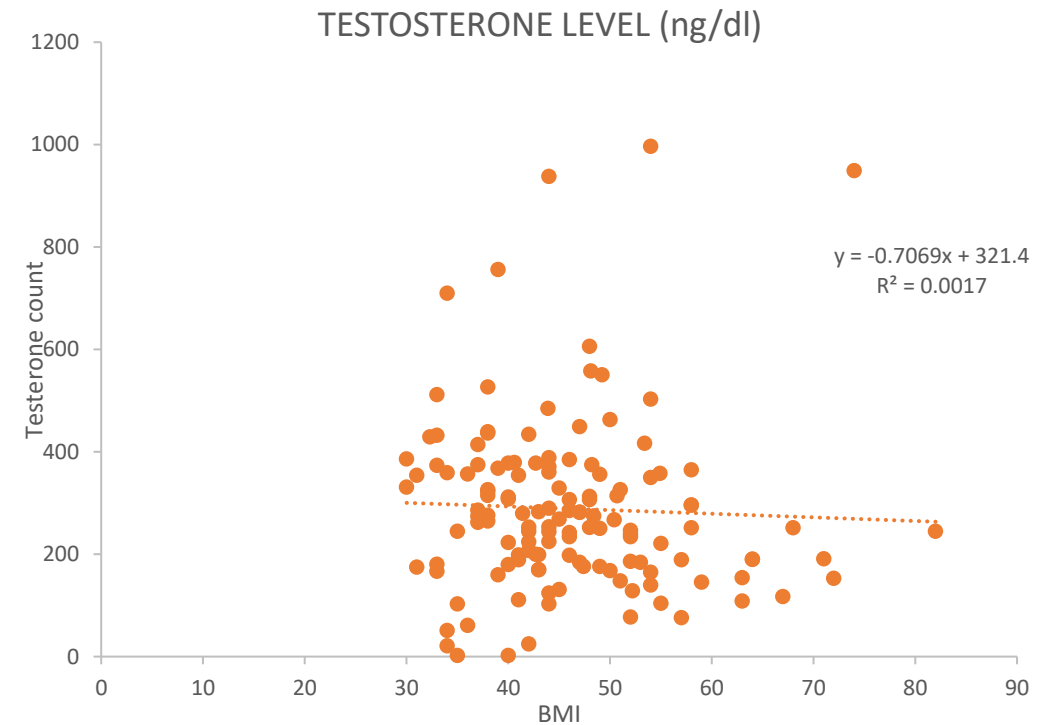
BMI group	Number of cases	Testosterone Count	
		Mean	SD
≤ 40	41	303.84	166.26
41 - 50	56	294.44	146.63
51 - 60	27	267.65	179.83
> 60	10	255.06	248.36
Total	134	288.98	167.21



Though there is no significant correlation but the trend is showing that as the BMI increases the testosterone level decreases.

Correlation between BMI and Testosterone levels

	TESTOSTERONE LEVEL (ng/dl)
Spearman's correlation coefficient (Rho)	-0.159
p-value	0.067
N	134



LIMITATIONS

- Single centered study
- Only Indian and young males are included
- Only Testosterone and free testosterone levels were studied
- Post bariatric outcomes are not mentioned in this study

(However ,our 5 year data will be ready in 2025)

- Complexity of multiple mechanisms involved in androgenesis is known but was beyond the scope of this study .

CONCLUSION

- ✓ Severe obesity is one of the important etiological factors for hypotestosteronemia and its manifestations in young adults.
- ✓ The **incidence of low testosterone** levels associated with severe obesity **is much higher than reported** so far and warrants special attention.
- ✓ **Early identification and aggressive treatment** of obesity and low testosterone levels can contribute to improvement in sexual activity , hypogonadism , QOL and productivity in young adult population with severe obesity
- ✓ Integrated members should have a **higher threshold of suspecting** and identifying low testosterone based on history and symptoms
- ✓ Larger studies with more detailed evaluation are necessary.

THANK YOU !
FROM
TEAM LOC

T together
E everyone
A achieves
M more



2023