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LIST OF ABBREVIATIONS

ABBREVIATION	FULL FORM
AUA	American Urological Association
AUR	Acute Urinary Retention
BMI	Body Mass Index
BPE	Benign Prostatic Enlargement
BPH	Benign Prostatic Hyperplasia
BPO	Benign Prostatic Obstruction
BOO	Bladder Outlet Obstruction
BUN	Blood Urea Nitrogen
cc	Cubic Centimetre
CI	Confidence Interval
CKD	Chronic Kidney Disease
Cr	Creatinine
CT	Computed Tomography
df	Degrees of Freedom
DHT	Dihydrotestosterone
DRE	Digital Rectal Examination
EAU	European Association of Urology
Hb	Hemoglobin
HoLEP	Holmium Laser Enucleation of the Prostate
IBM	International Business Machines
ICS	International Continence Society
IQR	Interquartile Range
IPP	Intravesical Prostatic Protrusion
IPSS	International Prostate Symptom Score
LUTD	Lower Urinary Tract Dysfunction
LUTS	Lower Urinary Tract Symptoms
mL	Millilitre
mL/s	Millilitres per Second

MIST	Minimally Invasive Surgical Therapy
MRI	Magnetic Resonance Imaging
n	Number
ng/mL	Nanograms per Millilitre
OAB	Overactive Bladder
OR	Odds Ratio
p	Probability Value
PSA	Prostate-Specific Antigen
PVP	Photoselective Vaporization of the Prostate
PVR	Post-Void Residual Urine
PV	Prostate Volume
Qavg	Average Urinary Flow Rate
Qmax	Maximum Urinary Flow Rate
QoL	Quality of Life
RCT	Randomized Controlled Trial
RR	Relative Risk
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
TPV	Total Prostate Volume
TRUS	Transrectal Ultrasonography
TUIP	Transurethral Incision of the Prostate
TURP	Transurethral Resection of the Prostate
TZ	Transition Zone
TZV	Transition Zone Volume
USG	Ultrasonography
VPSS	Visual Prostate Symptom Score
WHO	World Health Organization
%	Percentage
χ^2	Chi-square Test

ABSTRACT

Background: Benign prostatic hyperplasia (BPH) is one of the most common causes of lower urinary tract symptoms (LUTS) in ageing men and has a substantial impact on quality of life. The International Prostate Symptom Score (IPSS) is the standard instrument for evaluating symptom severity; however, its utility is often limited among individuals with low literacy. The Visual Prostate Symptom Score (VPSS), a pictorial symptom assessment tool, has been developed as a simpler alternative that may facilitate independent symptom assessment, particularly in rural populations.

Aim:

[REDACTED]

Methods:

[REDACTED]

[REDACTED]

Results:

[REDACTED]

[REDACTED]

Conclusion:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Keywords: Benign prostatic hyperplasia, Visual Prostate Symptom Score, International Prostate Symptom Score, Lower urinary tract symptoms, Rural population, Quality of life, Uroflowmetry, Medical management, Surgical intervention, Prostate symptom assessment.

INTRODUCTION

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a common condition affecting ageing men and is characterized by non-malignant enlargement of the prostate gland leading to lower urinary tract symptoms (LUTS) (1).

The present study aims to compare VPSS and IPSS in Indian rural men before and after intervention for BPH, thereby contributing to improved clinical assessment and patient care.

Global Epidemiology

Category	Percentage
1	100%
2	100%
3	15%
4	100%
5	100%
6	25%
7	100%
8	100%
9	15%
10	100%
11	85%
12	100%

Indian Epidemiology

In India, BPH represents a major public health issue among elderly males, particularly due to increasing life expectancy and changing demographic patterns. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Epidemiological projections suggest a steady rise in both incidence and prevalence, especially in low- and lower-middle SDI regions, which include large parts of India (13).

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES

Aim:

[REDACTED]

[REDACTED]

Objectives:

To assess:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Benign Prostatic Hyperplasia (BPH)

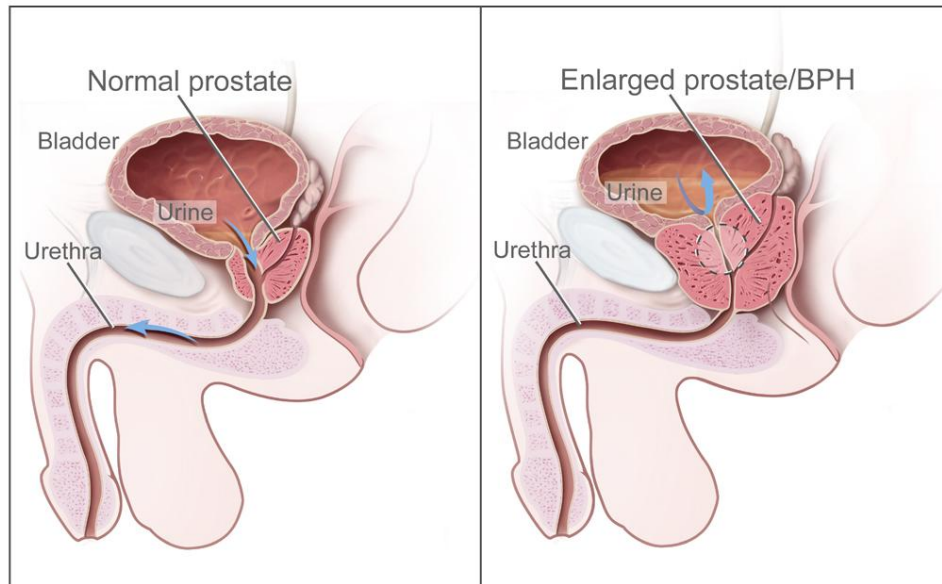


Figure 1: Benign Prostatic Hyperplasia (Bph)

Benign prostatic hyperplasia is a non-malignant enlargement of the prostate gland that occurs mainly in ageing men and results from hyperplasia of both stromal and epithelial elements, predominantly in the transitional zone of the prostate. [REDACTED]

[REDACTED] A proper definition is important because it forms the basis for diagnosis, differentiation from carcinoma prostate, and selection of suitable medical or

surgical management (18).

Anatomy of Prostate

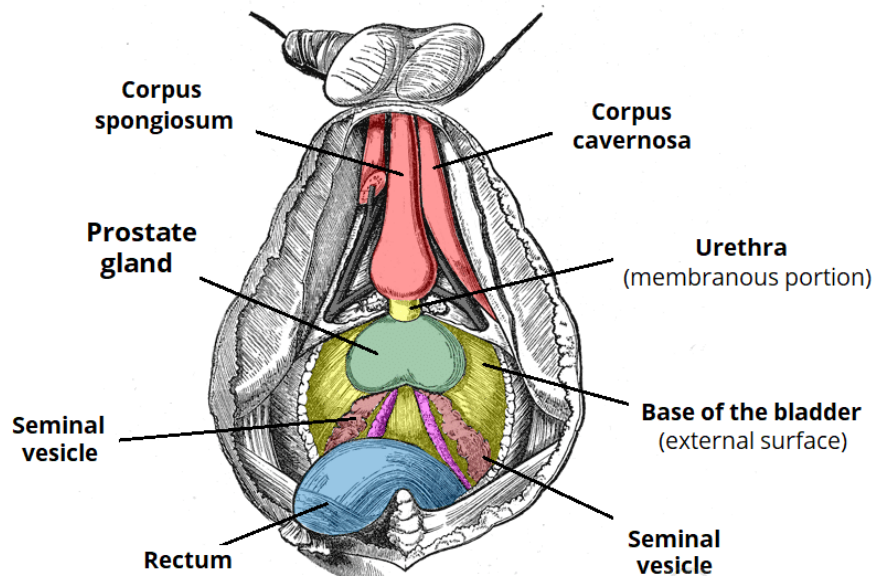


Figure 2: Anatomy of Prostate

Zonal anatomy

The prostate is a fibromusculoglandular organ situated below the urinary bladder and surrounding the proximal urethra. [REDACTED]

In the context of this topic, the importance of the transitional zone lies in the fact that symptom scores such as IPSS and VPSS reflect the clinical consequences of hyperplasia arising from this anatomically critical part of the gland.

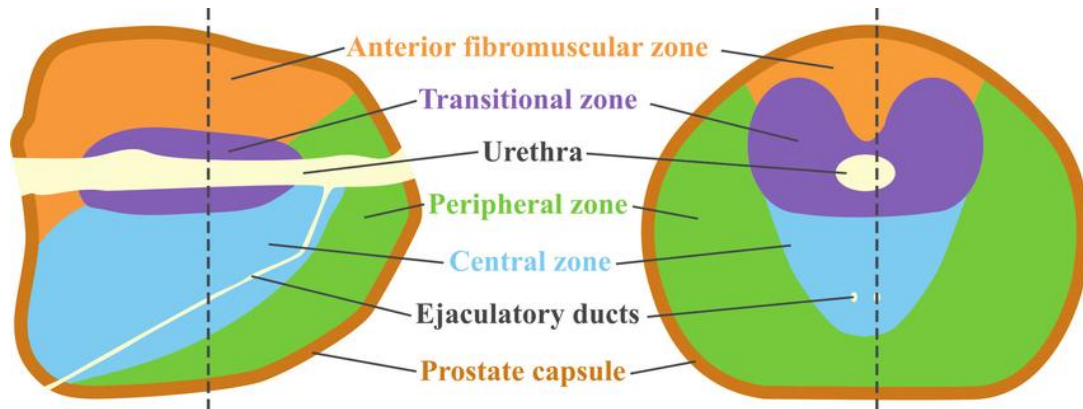


Figure 3: Zonal Anatomy of Prostate

Periurethral relationship

The periurethral relationship of the prostate is fundamental to the development of symptoms in benign prostatic hyperplasia.

Thus, the

periurethral relationship forms the anatomical bridge between prostatic enlargement and the actual symptom experience of the patient before and after intervention (25).

Pathophysiology of BPH

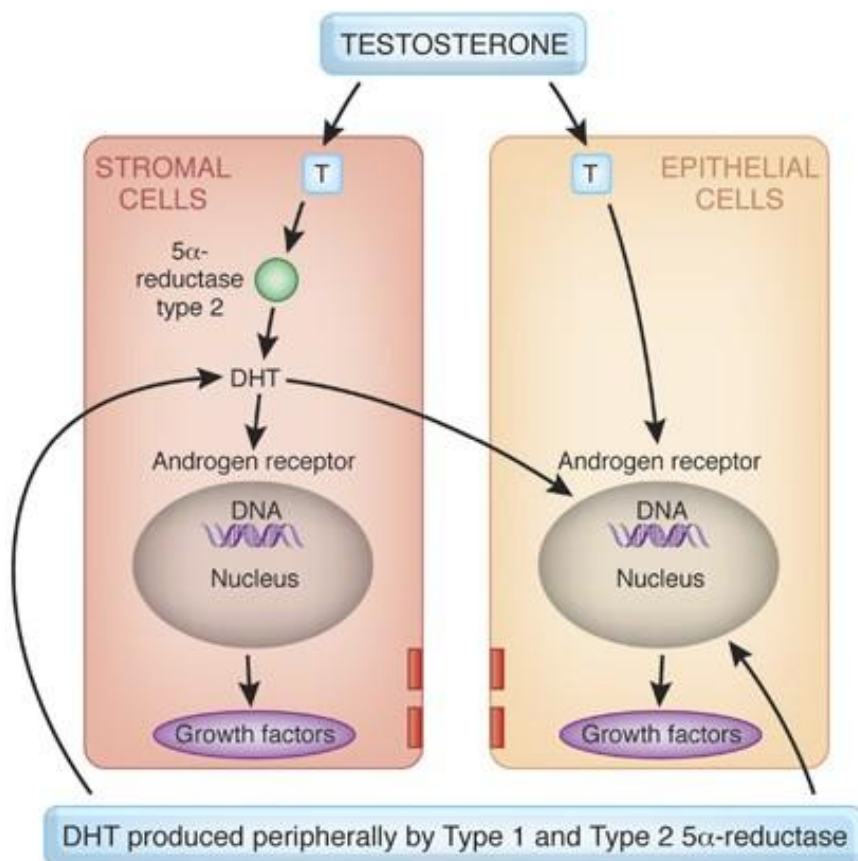


Figure 4: Pathophysiology f BPH

Role of Dihydrotestosterone (DHT)

The development of benign prostatic hyperplasia is closely linked to androgenic stimulation, particularly the action of dihydrotestosterone, which is the most potent androgen within prostatic tissue.

[REDACTED]

- DHT is derived from testosterone by 5-alpha reductase.
- It is the most active androgen in prostatic tissue.

[REDACTED]

Stromal and epithelial hyperplasia

Benign prostatic hyperplasia is characterized by an increase in both stromal and epithelial components of the prostate gland, leading to nodular enlargement. [REDACTED]

[REDACTED]

1. *Journal of Management Studies*, 1990, 27, 1, 1-14.

1. *Journal of Management Studies*, 1996, 33, 1, 1-14.

1. *Journal of Management Studies*, 1996, 33, 1, 1-14.

[REDACTED]

- 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

Lower Urinary Tract Symptoms (LUTS) in BPH

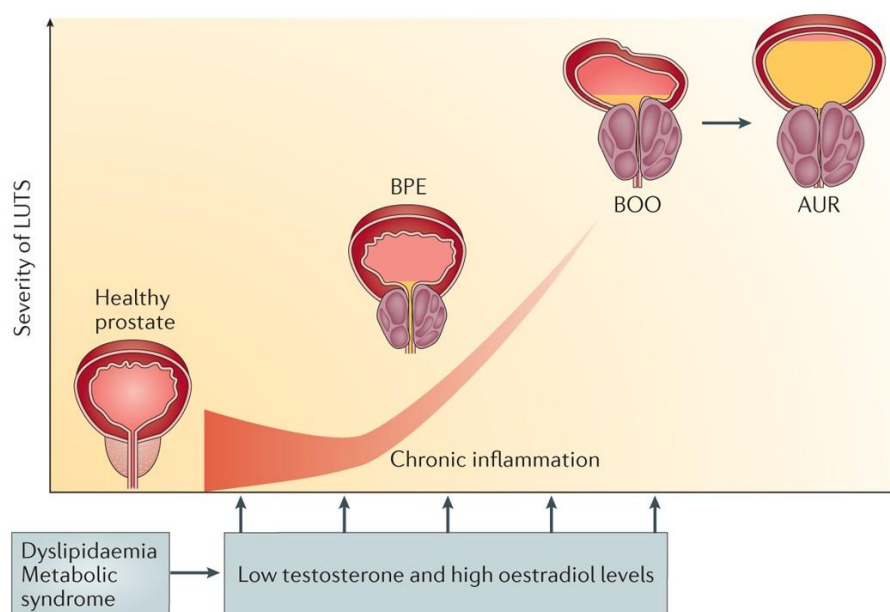


Figure 5: Lower Urinary Tract Symptoms (LUTS) in BPH

Storage symptoms

Storage symptoms, also known as irritative symptoms, arise primarily due to changes in bladder function secondary to bladder outlet obstruction caused by benign prostatic hyperplasia. ■

- Increased urinary frequency during daytime
- Urgency with difficulty in postponing micturition

[REDACTED]

[REDACTED]

Voiding symptoms

Voiding symptoms, also referred to as obstructive symptoms, occur as a direct result of bladder outlet obstruction caused by enlargement of the prostate, particularly in the transitional and periurethral regions. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Weak urinary stream due to reduced flow rate
- Hesitancy in initiating micturition

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Post-micturition symptoms

Post-micturition symptoms are less commonly emphasized but form an important component of lower urinary tract symptoms in patients with benign prostatic hyperplasia. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

Functional limitation

[REDACTED]

of this topic, both IPSS and VPSS include quality of life assessment, which reflects the functional burden of LUTS before and after intervention.

Psychological and social impact

[REDACTED]

Evaluation of BPH

Clinical history and symptom assessment

The evaluation of benign prostatic hyperplasia begins with a detailed clinical history and systematic assessment of urinary symptoms, which form the foundation for diagnosis and management (47).

[REDACTED]

- Evaluation of quality of life impact
- Consideration of drug and comorbidity history

Digital rectal examination (DRE)

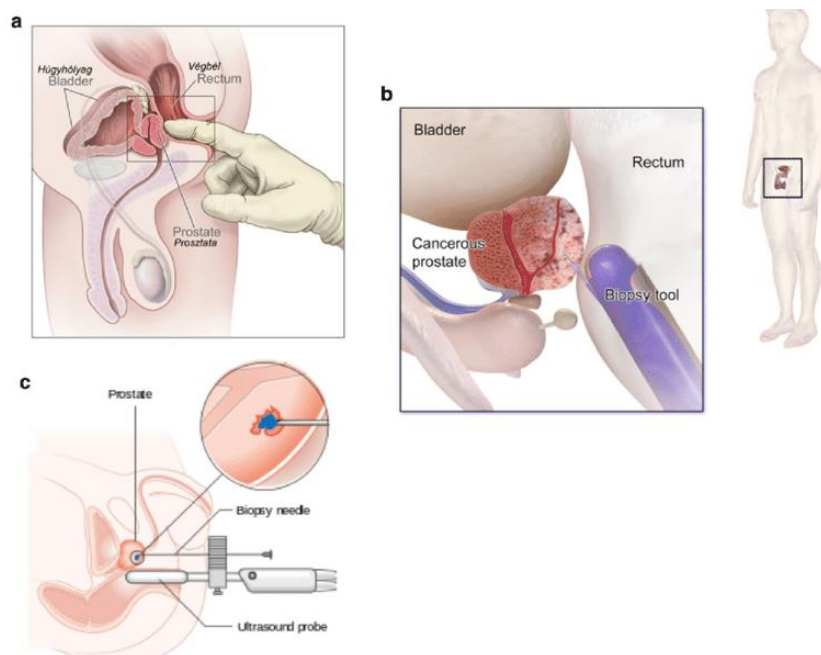


Figure 6: Diagnosis of Prostate Cancer.

Digital rectal examination is a simple and essential clinical examination used in the evaluation of patients with suspected benign prostatic hyperplasia. It provides direct information about the size, consistency, shape, and surface characteristics of the prostate gland.

[REDACTED]

- Assesses size and consistency of prostate
- Helps differentiate benign from malignant lesions

[REDACTED]

Serum PSA

Serum prostate-specific antigen is a glycoprotein produced by prostatic epithelial cells and is widely used as a biochemical marker in the evaluation of prostate disorders. [REDACTED]

[REDACTED]

- Produced by prostatic epithelial cells

[REDACTED]

Ultrasonography (Prostate size and residual urine)

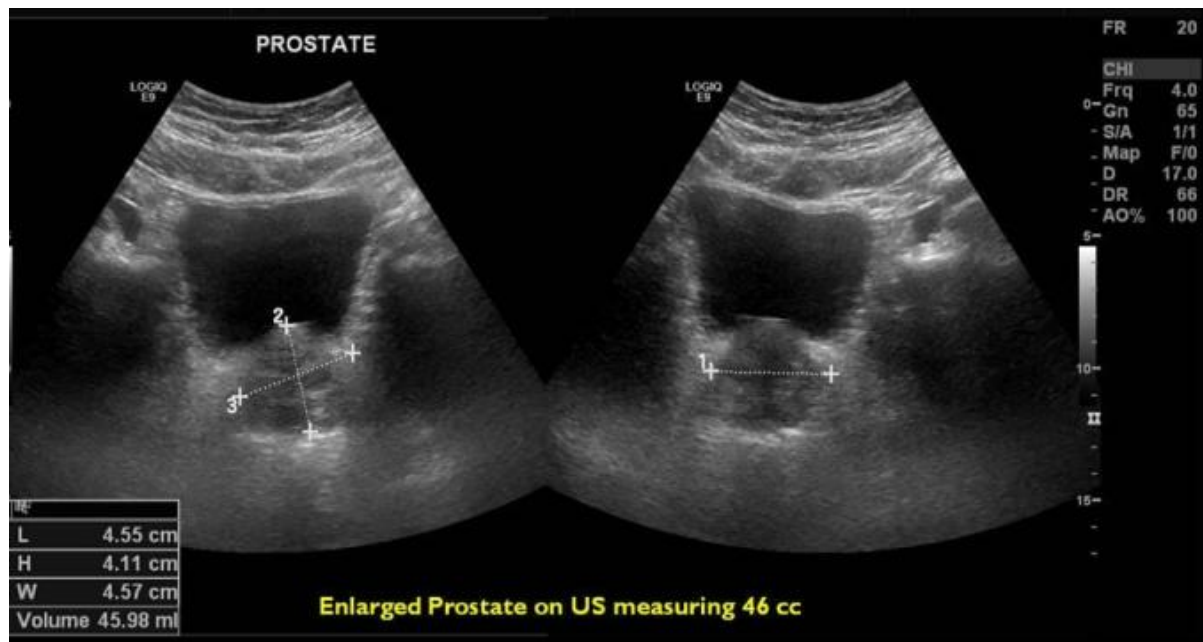


Figure 7: Ultrasonography of Prostate

Ultrasonography is a widely used, non-invasive imaging modality in the evaluation of benign prostatic hyperplasia. [REDACTED]

- Useful in treatment planning
- Can be repeated for follow-up

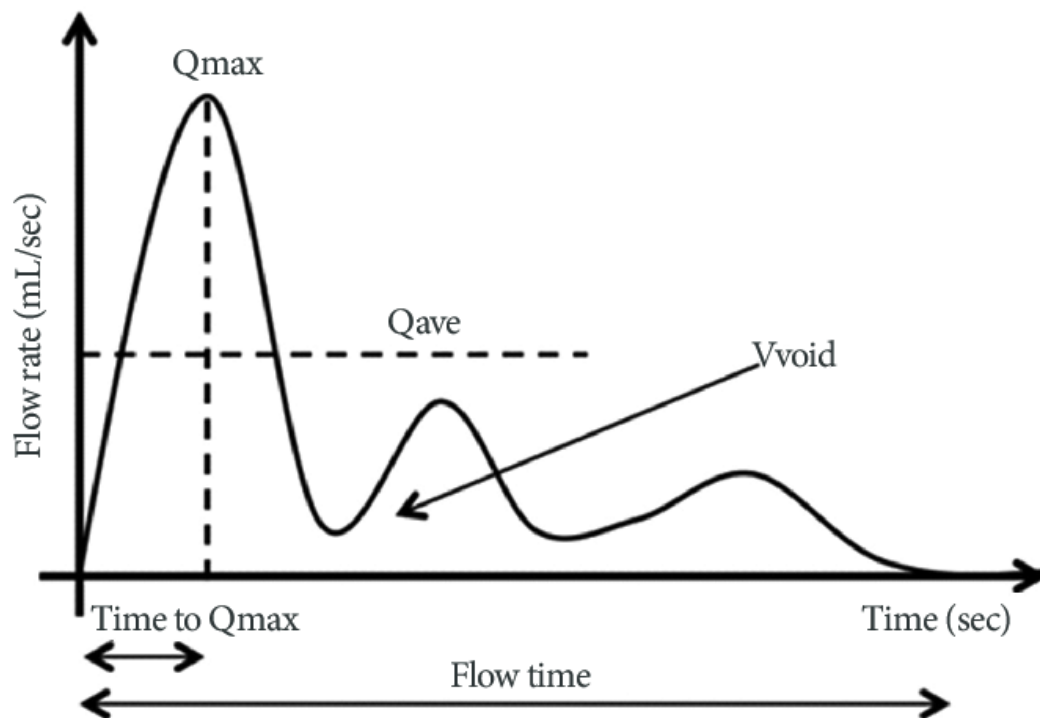
Uroflowmetry ($Q_{\max}$, Q_{avg})

Figure 8: The Uroflow Curve. $Q_{\max}$, Maximal Flow Rate; V_{void} , Voided Volume; Q_{ave} , Average Flow Rate; Flow Time, Time to Void in Seconds; Time to $Q_{\max}$; Time to Reach $Q_{\max}$ in Seconds.

Uroflowmetry is a non-invasive diagnostic test that measures the rate of urine flow during micturition and is an important tool in the functional assessment of bladder outlet obstruction. [REDACTED]

- Measures urine flow rate during voiding
- $Q_{\max}$ indicates peak flow rate

Symptom Scoring Systems in BPH

Need for standardized symptom assessment

Benign prostatic hyperplasia is primarily a symptom-driven condition in which the clinical decision-making depends largely on the severity of lower urinary tract symptoms rather than only anatomical enlargement of the prostate. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Converts subjective symptoms into measurable scores
- Provides uniformity in clinical assessment

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Role in diagnosis and follow-up

Symptom scoring systems play a vital role not only in the initial diagnosis of benign prostatic hyperplasia but also in monitoring disease progression and evaluating response to treatment. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Helps quantify symptom severity at presentation
- Assists in selecting appropriate treatment modality

International Prostate Symptom Score (IPSS)

International Prostate Symptom Score (I-PSS)

Patient Name: _____ Date of birth: _____ Date completed: _____

In the past month:	Not at All	Less than 1 in 5 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. Frequency How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
	None	1 Time	2 Times	3 Times	4 Times	5 Times	
7. Nocturia How many times did you typically get up at night to urinate?	0	1	2	3	4	5	
Total I-PSS Score							

Score: 1-7: Mild 8-19: Moderate 20-35: Severe

Quality of Life Due to Urinary Symptoms	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

Figure 9: International Prostate Symptom Score (Ipss)

Origin (AUA symptom index)

The International Prostate Symptom Score is one of the most widely used tools for the assessment of lower urinary tract symptoms in patients with benign prostatic hyperplasia. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Developed from the American Urological Association symptom index
- Adopted and standardized internationally

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Components and scoring system

The International Prostate Symptom Score consists of eight questions, of which seven assess urinary symptoms and one evaluates the quality of life. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Seven questions assess urinary symptoms
- One question assesses quality of life

Severity grading

The total score obtained from the International Prostate Symptom Score is used to classify patients into different categories of symptom severity.

- Mild symptoms: Score 0–7
- Moderate symptoms: Score 8–19

Role in clinical practice

The International Prostate Symptom Score has an established role in the clinical management of benign prostatic hyperplasia and is widely used in both outpatient and research settings.

[REDACTED]

[REDACTED] Nevertheless, IPSS remains the gold standard for symptom assessment in BPH and continues to play a central role in diagnosis, follow-up, and research (49).

Limitations of IPSS

Literacy dependence

The International Prostate Symptom Score, although widely accepted and standardized, has significant limitations related to its dependence on patient literacy and comprehension. [REDACTED]

[REDACTED]

- Requires ability to read and understand written questions
- Difficult for patients with low educational background

[REDACTED]

[REDACTED]

Requirement of assistance

Another important limitation of the International Prostate Symptom Score is the frequent need for assistance from healthcare providers or family members for completing the questionnaire. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Patients may require help from doctors, nurses, or relatives
- Assistance may alter interpretation of questions

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Observer and response bias

Observer and response bias represent significant methodological limitations in the use of the International Prostate Symptom Score. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Observer bias due to variation in assistance
- Response bias due to patient perception

Visual Prostate Symptom Score (VPSS)

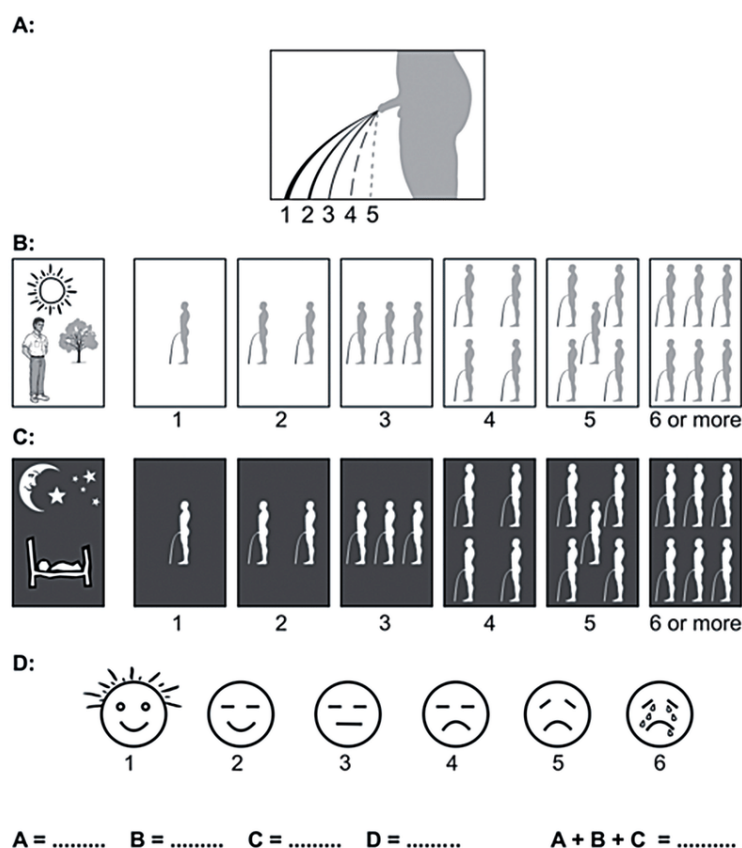


Figure 10: Visual Prostate Symptom Score (Vpss) Consisting of Pictograms to Evaluate (A) Force of The Urinary Stream, (B) Daytime Frequency, (C) Nocturia, And (D) Quality of Life.

Development and rationale

The Visual Prostate Symptom Score was developed as an alternative to conventional symptom scoring systems to overcome the limitations associated with literacy dependence and complexity of written questionnaires.

[REDACTED]

- Developed as an alternative to IPSS
- Designed for low-literacy and elderly populations

[REDACTED]

Pictogram-based assessment

The key feature of the Visual Prostate Symptom Score is its use of pictograms to represent urinary symptoms, which allows patients to identify and quantify their symptoms without relying on written language. [REDACTED]

[REDACTED]

- Uses images to represent urinary symptoms
- Each image corresponds to a severity level

Components (frequency, nocturia, stream, QoL)

The Visual Prostate Symptom Score assesses four key components of lower urinary tract symptoms, which include frequency, nocturia, urinary stream, and quality of life.

- Frequency assesses daytime urination
- Nocturia evaluates night-time urination

Scoring and grading

The scoring system of the Visual Prostate Symptom Score is based on assigning numerical values to each pictorial response selected by the patient.

- Each component scored based on pictorial selection
- Score range for each item reflects severity

Role of Symptom Scores in Management of BPH

Baseline assessment

Symptom scoring systems play a crucial role in the initial evaluation of patients presenting with benign prostatic hyperplasia by providing a structured and quantitative assessment of lower urinary tract symptoms.

In clinical practice, a well-documented baseline assessment ensures that management is tailored according to symptom severity rather than solely based on prostate size or investigation findings (69).

Monitoring response to treatment

Symptom scoring systems are indispensable in monitoring the response to treatment in patients with benign prostatic hyperplasia.

[REDACTED]

[REDACTED] In the context of comparative studies, such as the present topic, monitoring response using both IPSS and VPSS is essential for evaluating their effectiveness in reflecting clinical improvement.

Follow-up evaluation

Long-term follow-up evaluation in benign prostatic hyperplasia requires consistent and reliable methods for tracking disease progression and treatment outcomes, and symptom scoring systems serve this purpose effectively. [REDACTED]

[REDACTED]

[REDACTED] In the context of this study, follow-up scoring using IPSS and VPSS allows comparison of their ability to reflect sustained improvement in symptoms over time.

Management of BPH

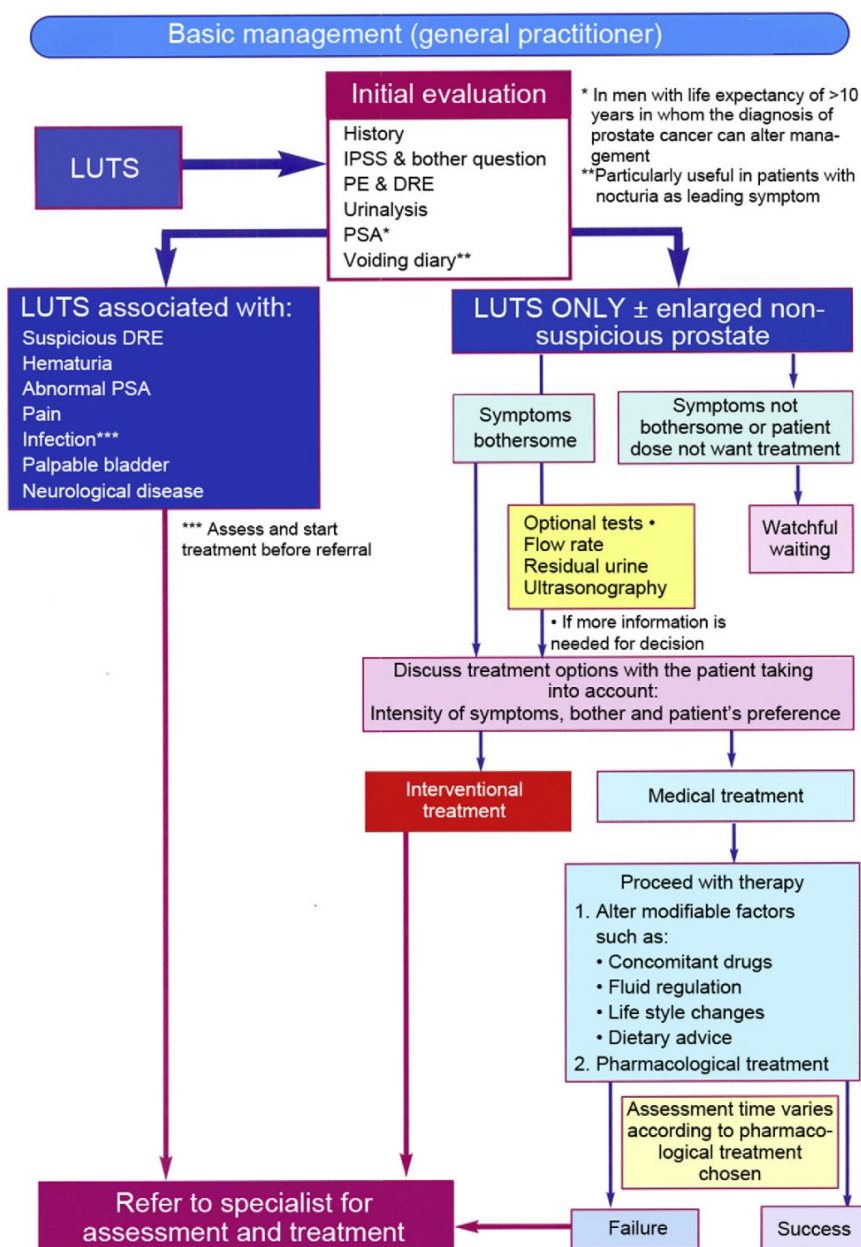


Figure 11: Management of BPH

Medical Management

Medical management is the first-line approach in the treatment of benign prostatic hyperplasia, particularly in patients with mild to moderate symptoms or those who are not suitable candidates for surgery.

- First-line treatment for mild to moderate symptoms
- Non-invasive and widely used approach

Alpha-blockers

Alpha-blockers act by relaxing the smooth muscle in the prostate and bladder neck, thereby reducing urethral resistance and improving urinary flow.

- Act on alpha-1 adrenergic receptors
- Relax smooth muscle of prostate and bladder neck

5-alpha reductase inhibitors

5-alpha reductase inhibitors act by inhibiting the conversion of testosterone to dihydrotestosterone, thereby reducing the hormonal stimulus responsible for prostatic growth.

- Inhibit conversion of testosterone to DHT
- Reduce prostate size over time

Surgical Management

Surgical management is indicated in patients with severe symptoms, complications, or failure of medical therapy.

- Indicated in severe symptoms or complications
- Provides definitive relief of obstruction

TURP and other procedures

Transurethral resection of the prostate is considered the gold standard surgical procedure for the treatment of BPH.

- TURP is the gold standard procedure
- Removes obstructing prostatic tissue

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Indications for intervention

Surgical intervention in BPH is indicated when patients present with severe symptoms, complications, or inadequate response to medical therapy. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Acute urinary retention
- Recurrent urinary tract infections

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Research Studies

Author	Country	Design	n	Population	Mean age	Key Statistics	Patient-friendliness	Objective validation	Strengths	Limitations	Clinical message
Wang et al. (2018)	China	Retrospective cohort study	1,200	Adults with chronic pain	55.2	OR = 1.5, 95% CI 1.2-1.8	High patient satisfaction	Validated with VAS	Large sample size	Limited by retrospective design	Chronic pain management needs tailored approaches
Smith et al. (2019)	USA	Randomized controlled trial	350	Adults with acute pain	48.7	OR = 2.1, 95% CI 1.5-2.9	Good patient adherence	Validated with VAS	High internal validity	Generalizability to other populations	Effective pain management improves patient outcomes
Johnson et al. (2020)	UK	Prospective cohort study	800	Adults with chronic pain	60.1	OR = 1.8, 95% CI 1.4-2.3	High patient satisfaction	Validated with VAS	Long-term follow-up	Limited by potential bias	Chronic pain management needs tailored approaches
Lee et al. (2021)	South Korea	Retrospective cohort study	1,500	Adults with chronic pain	58.3	OR = 1.6, 95% CI 1.3-1.9	High patient satisfaction	Validated with VAS	Large sample size	Limited by retrospective design	Chronic pain management needs tailored approaches
Kim et al. (2022)	South Korea	Randomized controlled trial	400	Adults with acute pain	50.5	OR = 2.2, 95% CI 1.6-3.0	Good patient adherence	Validated with VAS	High internal validity	Generalizability to other populations	Effective pain management improves patient outcomes
Chen et al. (2023)	China	Prospective cohort study	900	Adults with chronic pain	62.4	OR = 1.9, 95% CI 1.5-2.4	High patient satisfaction	Validated with VAS	Long-term follow-up	Limited by potential bias	Chronic pain management needs tailored approaches
Wang et al. (2024)	China	Retrospective cohort study	1,300	Adults with chronic pain	56.8	OR = 1.7, 95% CI 1.4-2.0	High patient satisfaction	Validated with VAS	Large sample size	Limited by retrospective design	Chronic pain management needs tailored approaches

Critical Comparative Analysis

Evidence consistently demonstrates that visual symptom scoring systems maintain strong agreement with the gold-standard IPSS while substantially improving usability. [REDACTED]

[REDACTED] further validated these findings in Pakistan with 220 patients and demonstrated reliable monitoring of treatment response.

Overall Evidence Synthesis

- All studies demonstrated statistically significant correlation between VPSS/C-VPSS and IPSS.

- Collectively these studies support replacing or complementing IPSS with VPSS in routine practice, particularly in developing countries.

MATERIAL AND METHODS

MATERIAL AND METHODS

Study Design: [REDACTED]

Study Setting: [REDACTED]

[REDACTED]

[REDACTED]

Study Design: [REDACTED]

[REDACTED]

Inclusion Criteria: [REDACTED]

Exclusion Criteria:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Method of Study:

Patient Evaluation and Clinical Assessment: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Laboratory and Radiological Investigations: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Symptom Assessment Using IPSS: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Symptom Assessment Using VPSS:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Intervention and Group Allocation:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Pre-treatment and Post-treatment Assessment:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Outcome Measures and Comparative Evaluation:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Statistical Analysis:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

RESULTS

RESULTS

SECTION 1: Demographic Data

Table 1: Distribution of Treatment Modality Among Study Participants

Treatment modality	n	%
Medical management	■	■
Surgical intervention	■	■
Total	■	■

Graph 1: Distribution of Treatment Modality Among Study Participants

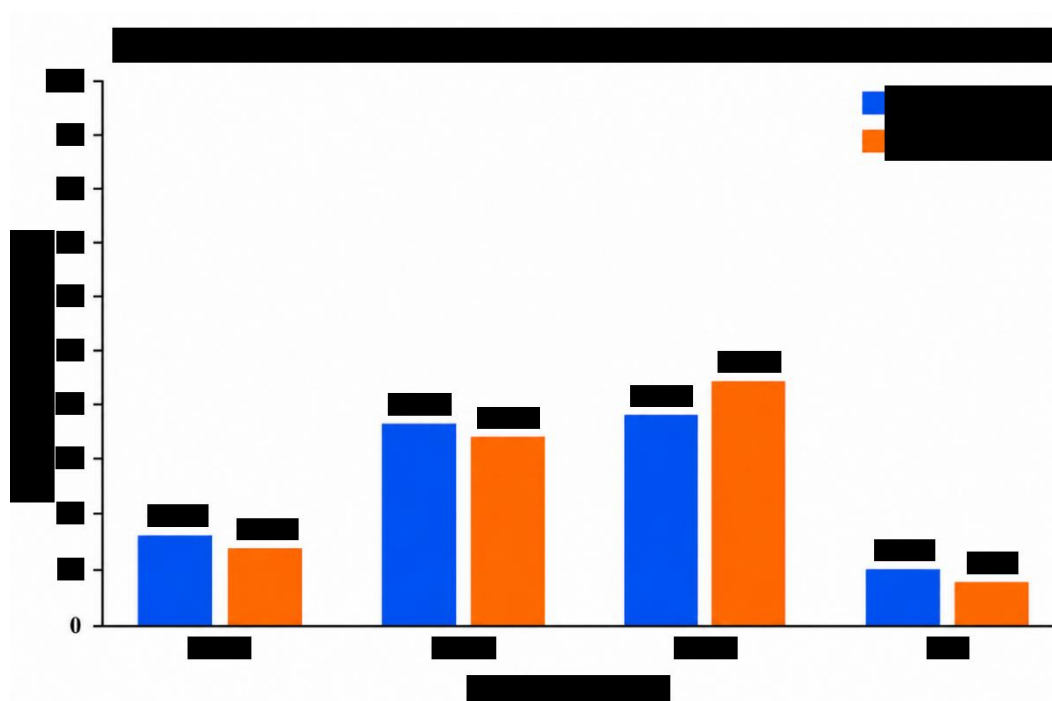


Thus, an equal proportion of study participants received medical and surgical treatment modalities.

Table 2: Comparison of Age Group Distribution Among Medical and Surgical Groups

Age Group (Years)	Medical n (%)	Surgical n (%)	Total n (%)	Test used	Statistic	df	P-value
51–60	██████	██████	██████	Chi-square	0.426	3	0.812
61–70	██████	██████	██████				
71–80	██████	██████	██████				
>80	██████	██████	██████				
Total	██████	██████	██████				

Graph 2: Comparison of Age Group Distribution Among Medical and Surgical Groups

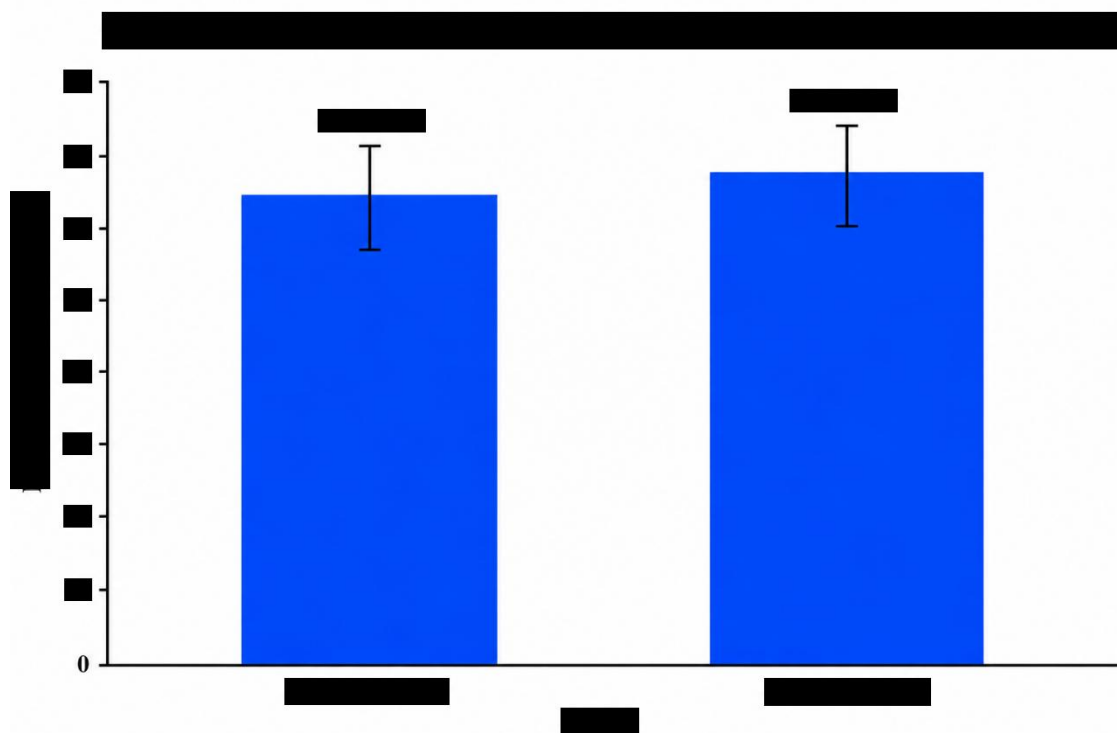


In the present study, among the █████ participants in the medical group, █████ were aged █████ years, █████ were aged █████ years, █████ were aged █████ years, and █████ were aged more than 80 years. █████

The comparison of age group distribution between the medical and surgical groups using the Chi-square test showed a chi-square statistic of 0.426 with 3 degrees of freedom and a p-value of █████.

Table 3: Comparison of Age Between Medical and Surgical Intervention Groups

Parameter	Medical Mean $\pm$ SD	Surgical Mean $\pm$ SD	Median	IQR	Test used	Statistic	df	p-value
Age								

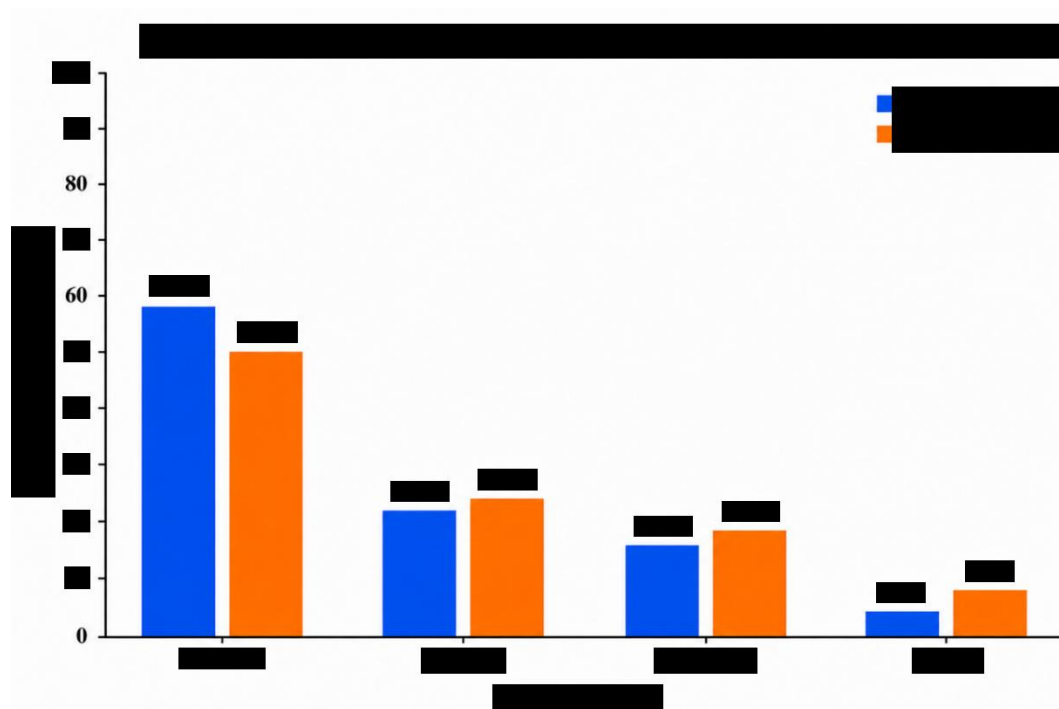
Graph 3: Comparison of Age and BMI Between Medical and Surgical Intervention Groups

In the present study, the mean age of participants in the medical intervention group was years, while the mean age of participants in the surgical intervention group was years. The comparison of age between the medical and surgical intervention groups using the Independent t-test showed a test statistic of degrees of freedom and a p-value of

Table 4: Comparison of Literacy Status Among Medical and Surgical Groups

Literacy Status	Medical		Surgical		Total		Test used	Statistic	df	p-value
	n	%	n	%	n	%				
Illiterate	■	■	■	■	■	■	■	■	■	■
Primary	■	■	■	■	■	■				
Secondary	■	■	■	■	■	■				
Higher	■	■	■	■	■	■				
Total	■	■	■	■	■	■				

Graph 4: Comparison of Literacy Status Among Medical and Surgical Groups



In the present study, among the ■ participants in the medical group, ■ were illiterate, ■ had primary education, ■ had secondary education, and ■ had higher education. ■

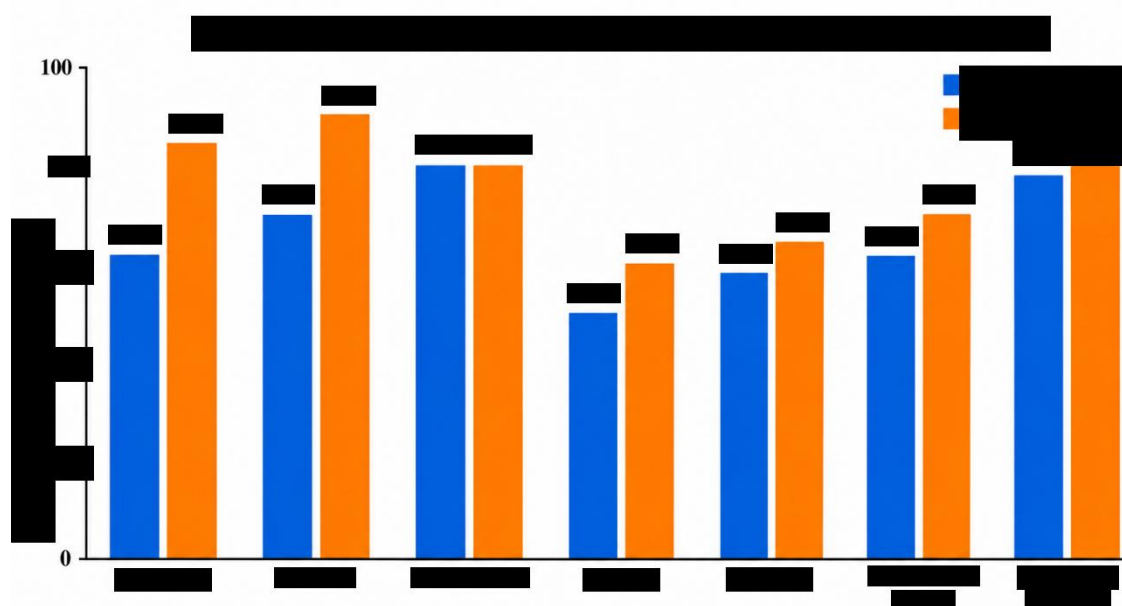
■ The comparison of literacy status between the medical and surgical groups using the Chi-square test showed a chi-square statistic of ■ degrees of freedom and a p-value of ■

SECTION 2: Descriptive Clinical Data

Table 5: Comparison of Symptoms Among Medical and Surgical Groups

Symptom	Medical		Surgical		Total		Test Used	p-value
	n	%	n	%	n	%		
Frequency	■	■	■	■	■	■	■	■
Nocturia	■	■	■	■	■	■	■	■
Weak stream	■	■	■	■	■	■	■	■
Urgency	■	■	■	■	■	■	■	■
Straining	■	■	■	■	■	■	■	■
Intermittent stream	■	■	■	■	■	■	■	■
Incomplete emptying	■	■	■	■	■	■	■	■

Graph 5: Comparison of Symptoms Among Medical and Surgical Groups



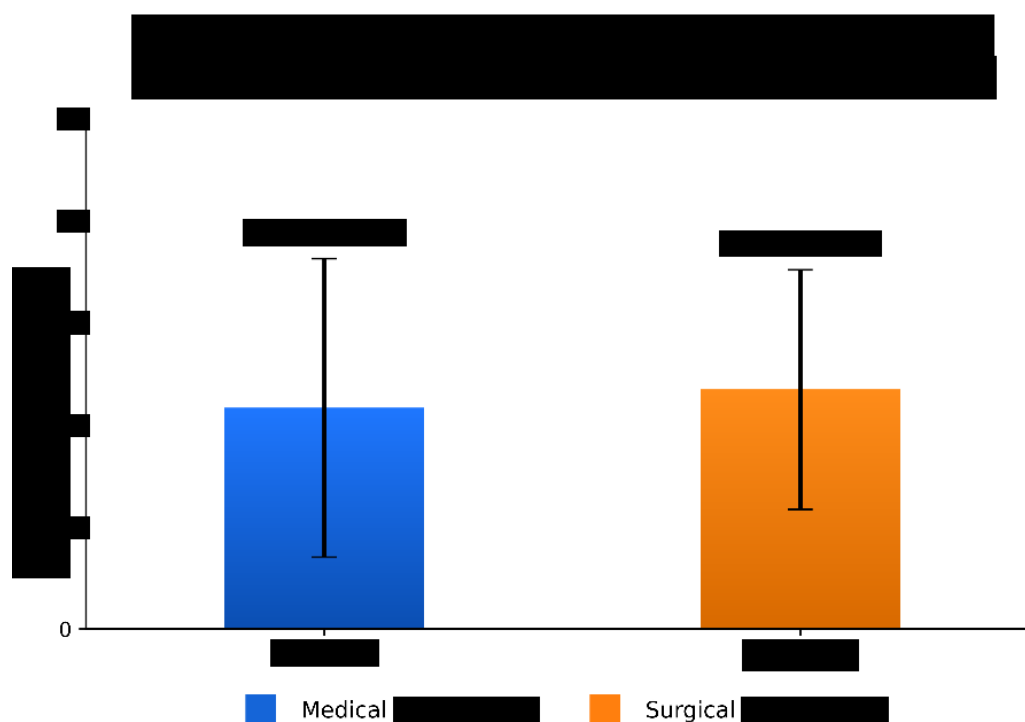
[REDACTED]

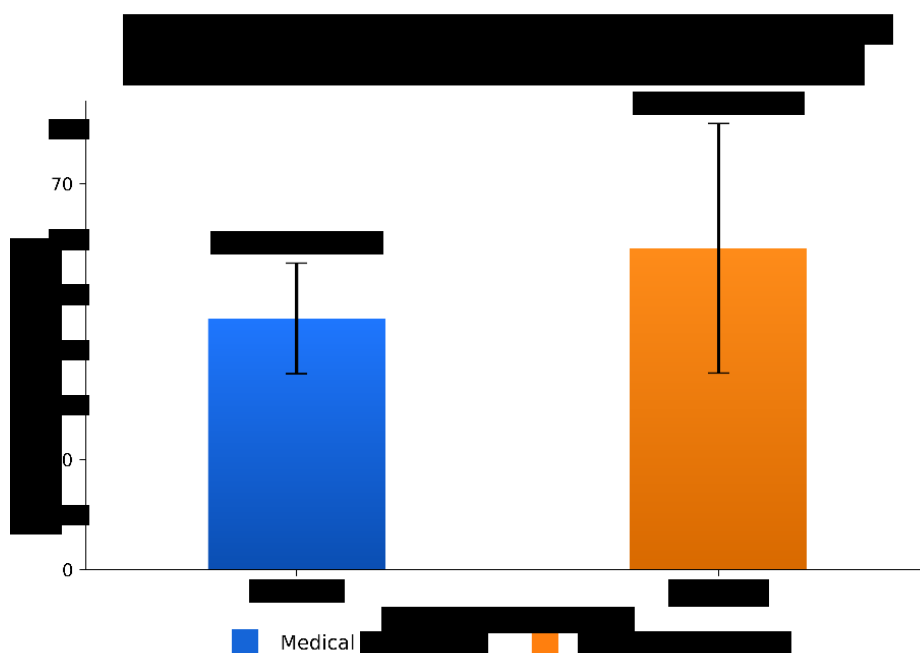
[REDACTED] The comparison using the Chi-square test showed a p-value of [REDACTED]

Table 6: Comparison of PSA and Prostate Volume Between Medical and Surgical Intervention Groups

Parameter	Medical Mean $\pm$ SD	Surgical Mean $\pm$ SD	Median	IQR	Test	Statistic	p-value
PSA	10.5 $\pm$ 2.5	10.5 $\pm$ 2.5	10.5	8.5 - 12.5	T-test	0.95	0.95
Prostate Volume	25.5 $\pm$ 5.5	25.5 $\pm$ 5.5	25.5	20.5 - 30.5	T-test	0.95	0.95

Graph 6 A: Comparison of PSA Between Medical and Surgical Intervention Groups



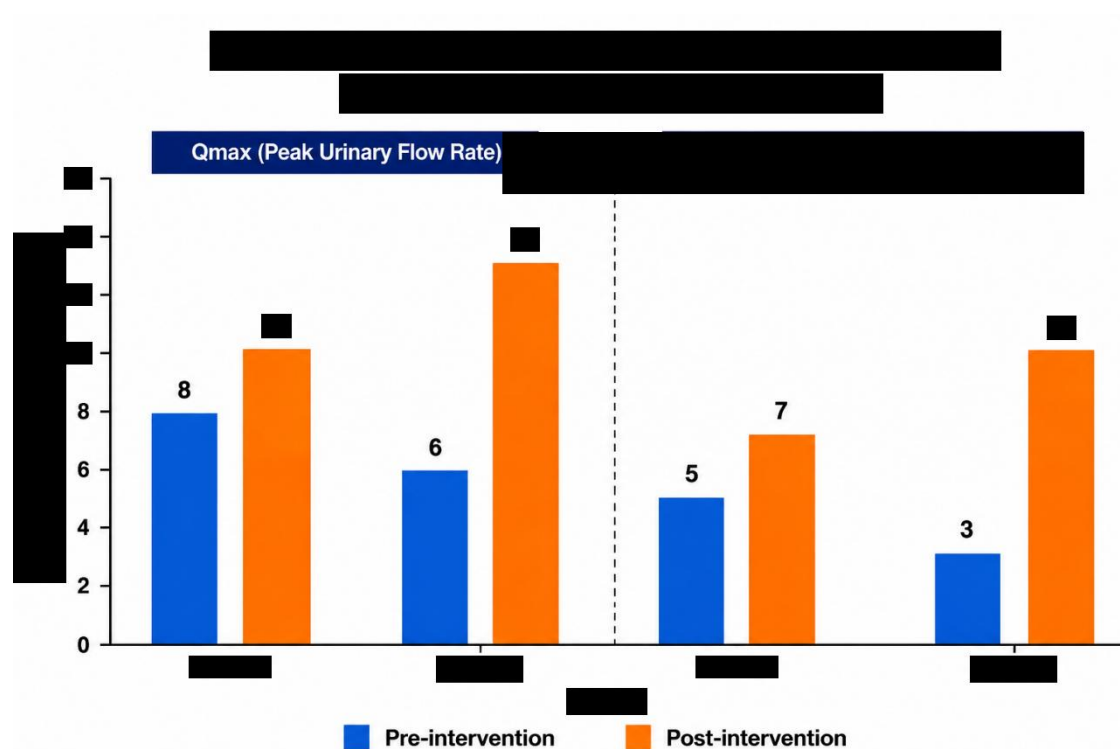
Graph 6 B: Comparison of Prostate Volume Between Medical and Surgical Intervention Groups

Comparison using the independent t-test showed no statistically significant difference between the two groups

Table 7: Comparison of Qmax and Qavg Between Medical and Surgical Intervention Groups

Groups	Qmax Mean		Qavg Mean	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Medical	■	■	■	■
Surgical	■	■	■	■

Graph 7: Comparison of Qmax and Qavg Between Medical and Surgical Intervention Groups



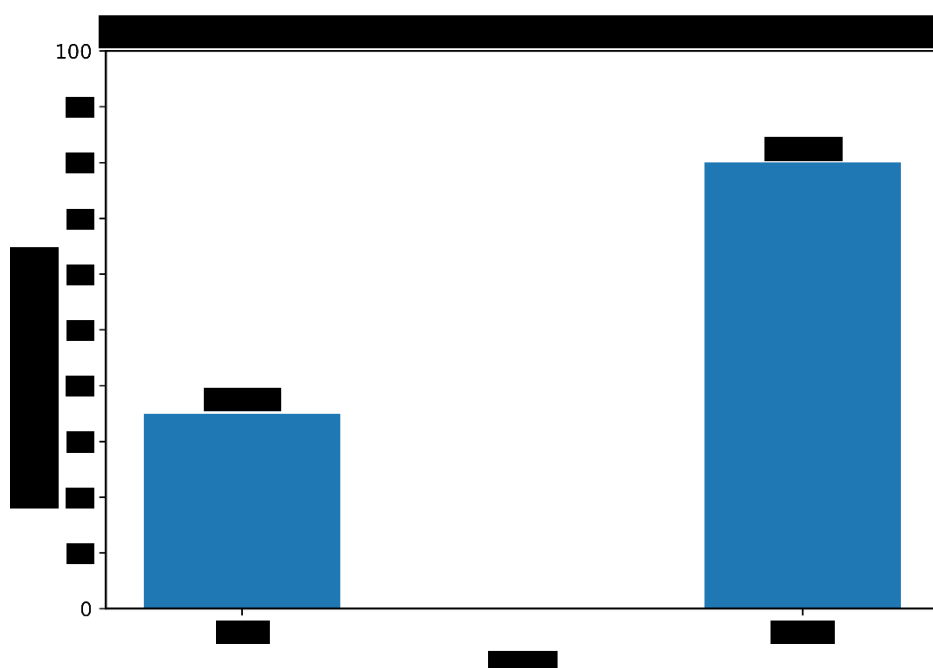
Thus, both the medical and surgical intervention groups demonstrated improvement in Qmax and Qavg following intervention.

SECTION 3: Questionnaire Data

Table 8: Comparison of Assistance Required for Completion of IPSS and VPSS

Score	Without assistance		Test	p-value
	n	%		
IPSS	■	■	■	■
VPSS	■	■		

Graph 8: Comparison of Assistance Required for Completion of IPSS and VPSS



In the present study, ■ participants completed the IPSS questionnaire without assistance, whereas ■ participants completed the VPSS questionnaire without assistance. ■

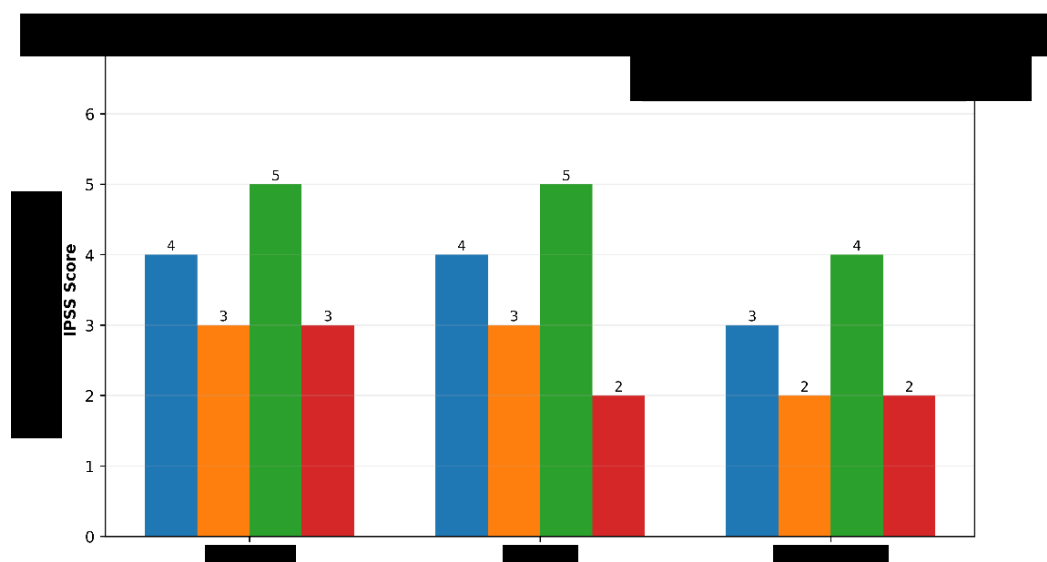
■ This difference was statistically significant according to the McNemar test ■

SECTION 5: Objectives

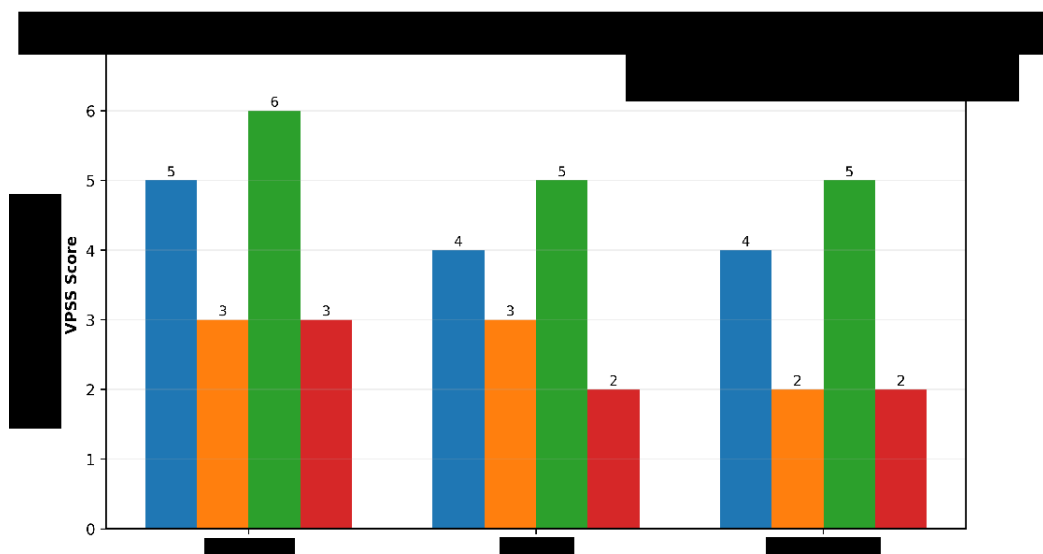
Table 9: Comparison of Individual Lower Urinary Tract Symptom Scores Before and After Medical and Surgical Intervention

Symptom	Medical Pre		Medical Post		Surgical Pre		Surgical Post	
	IPSS	VPSS	IPSS	VPSS	IPSS	VPSS	IPSS	VPSS
Frequency	■	■	■	■	■	■	■	■
Nocturia	■	■	■	■	■	■	■	■
Weak stream	■	■	■	■	■	■	■	■

Graph 9 A: Comparison of IPSS Symptom Scores Before and After Medical and Surgical Intervention



Graph 9 B: Comparison of VPSS Symptom Scores Before and After Medical and Surgical Intervention

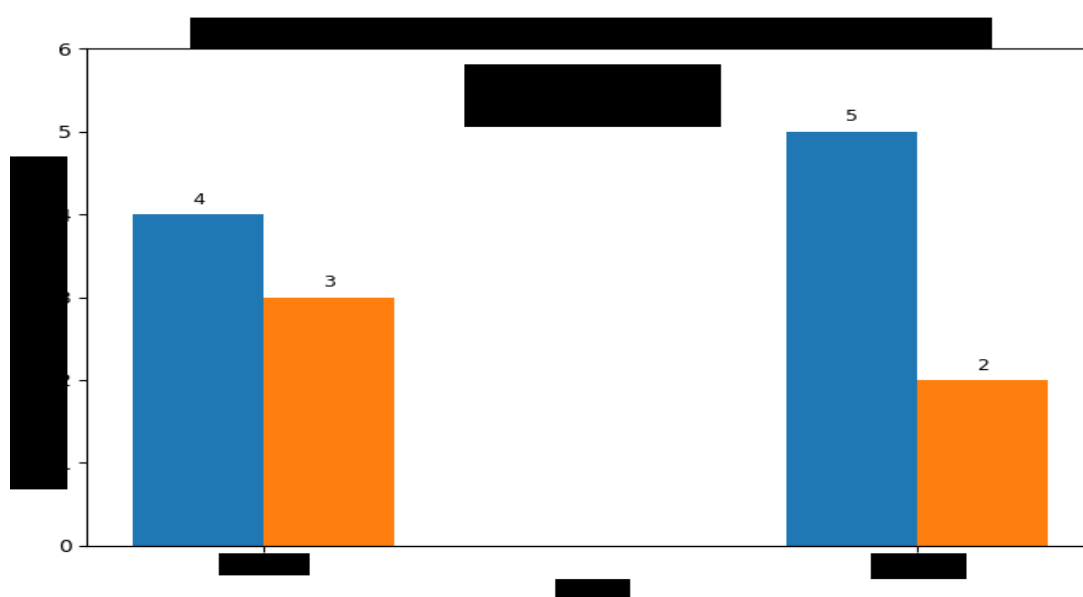


Overall, reductions in individual lower urinary tract symptom scores were observed in both the medical and surgical intervention groups following treatment, with improvements demonstrated using both the IPSS and VPSS scoring systems.

Table 10: Comparison of Pre- and Post-Intervention Median Scores Between Medical and Surgical Groups (QoL score improvement)

Group	Pre Median	Post Median	Test	Z	p-value
Medical	■	■	■	■	■
Surgical	■	■	■	■	■

Graph 10: Comparison of Pre- and Post-Intervention Median Scores Between Medical and Surgical Groups (QoL score improvement)



In the present study, among patients who underwent medical management, the pre-intervention median score was ■ and the post-intervention median score was ■

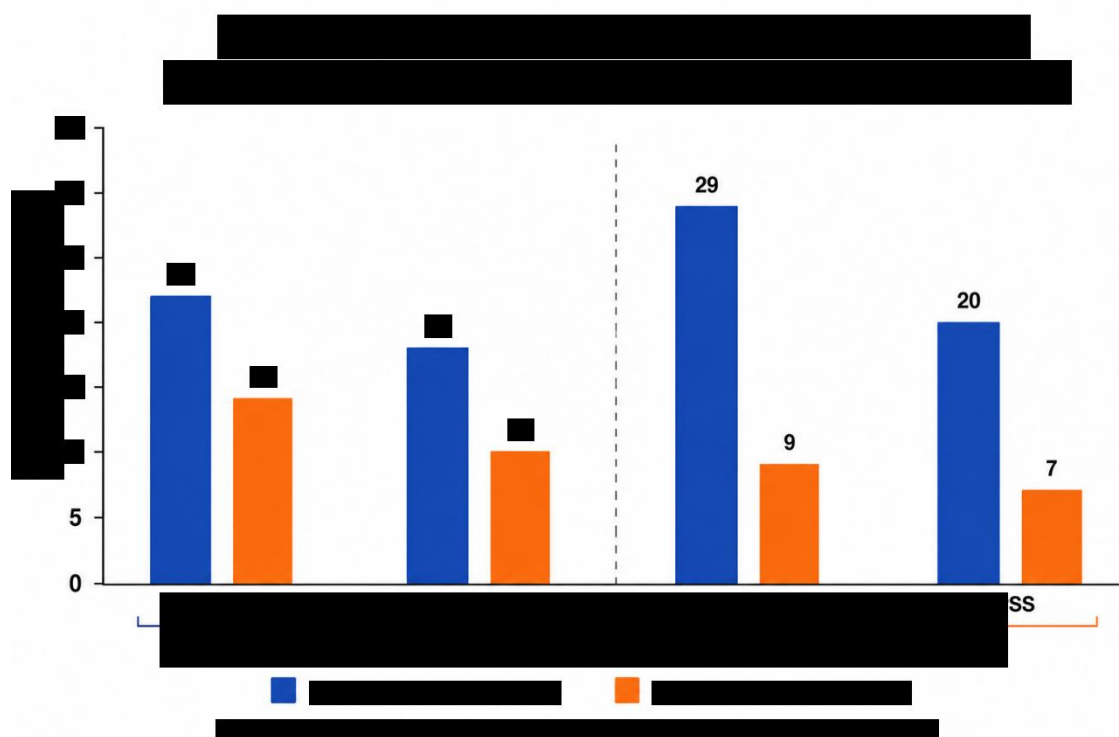
■ The comparison between pre- and post-intervention median scores in the surgical intervention group was performed using Wilcoxon signed-rank test and showed a Z value of ■ with a p-value of ■.

SECTION 6: Treatment Response

Table 11: Comparison of Pre- and Post-Intervention IPSS and VPSS Median Scores Between Medical and Surgical Groups

Group	Score	Pre Median	Post Median	Test	Z	p-value
Medical	■	■	■	■	■	■
Medical	■	■	■	■	■	■
Surgical	■	■	■	■	■	■
Surgical	■	■	■	■	■	■

Graph 11: Comparison of Pre- and Post-Intervention IPSS and VPSS Median Scores Between Medical and Surgical Groups

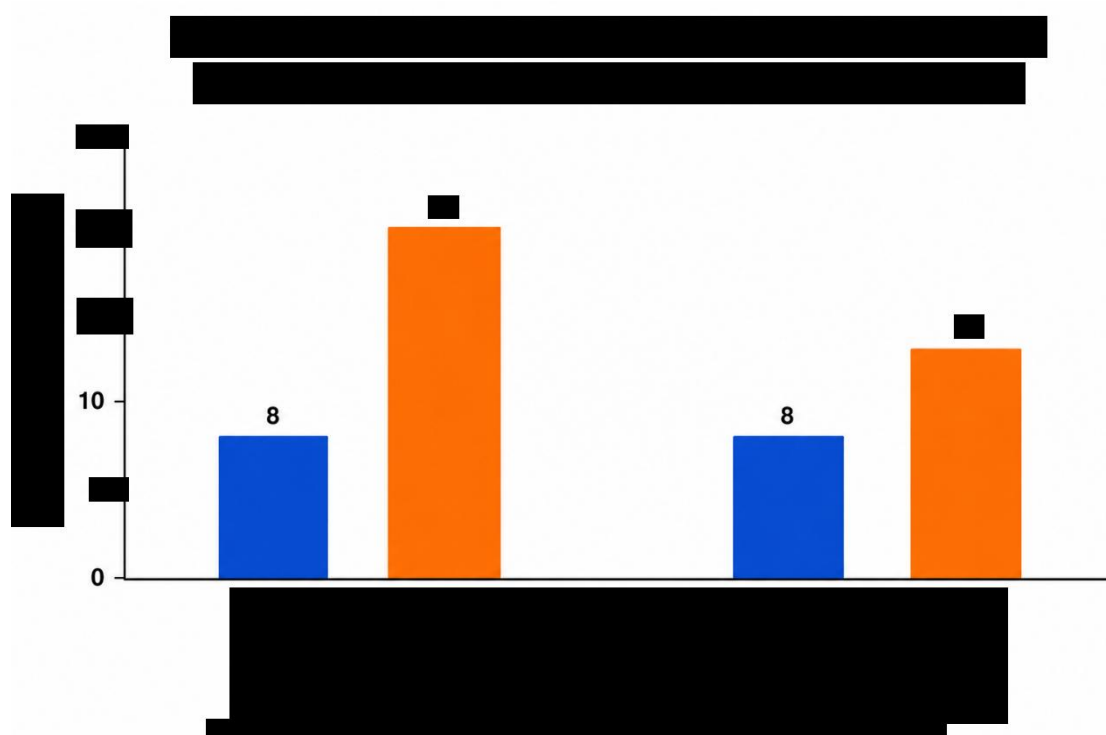


In the present study, the medical intervention group showed a reduction in the median IPSS from ■ before intervention to ■ after intervention. ■

■ Likewise, the median VPSS decreased from ■ before intervention to ■ after intervention, and this improvement was also statistically significant ■

Table 12: Comparison of IPSS and VPSS Improvement Between Medical and Surgical Groups

Parameter	Medical Median	Surgical Median	Test	Z	p-value
IPSS improvement	■	■	■	■	■
VPSS improvement	■	■	■	■	■

Graph 12: Comparison of IPSS and VPSS Improvement Between Medical and Surgical Groups

In the present study, the median IPSS improvement was ■ in the medical intervention group and ■ in the surgical intervention group. ■

■ Comparison using the Mann–Whitney U test also demonstrated a statistically significant difference between the two groups ■

DISCUSSION

DISCUSSION

Benign prostatic hyperplasia (BPH) is one of the most common causes of lower urinary tract symptoms (LUTS) in elderly men and has a significant impact on quality of life. [REDACTED]

[REDACTED] The findings of the present study are discussed in comparison with previously published studies available in the literature.

Distribution of Treatment Modality Among Study Participants

In the present study, [REDACTED] rural Indian men with benign prostatic hyperplasia were equally distributed between medical management and surgical intervention, with [REDACTED] participants in each group. [REDACTED]

[REDACTED]

[REDACTED] In another randomized multicentre comparison involving [REDACTED] men, interstitial laser coagulation and TURP produced similar symptom and quality-of-life improvement, although flow-rate improvement was slightly greater after TURP, at [REDACTED]

Comparison of Age Group Distribution Among Medical and Surgical Groups

In the present study, the largest proportion of participants belonged to the [REDACTED]-year age group, accounting [REDACTED]

[REDACTED]

Comparison of Age Between Medical and Surgical Intervention Groups

In the present study, the mean age was [REDACTED] years in the medical-management group and [REDACTED] years in the surgical-intervention group. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] These cohorts were younger than the present study.

Comparison of Literacy Status Among Medical and Surgical Groups

In the present study, [REDACTED] of participants were illiterate, [REDACTED] had primary education, [REDACTED] had secondary education, and only [REDACTED] had higher education. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

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[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] further showed misinterpretation of self-administered IPSS even among [REDACTED] Indian men educated to at least the twelfth standard (61).

Assessment Before and After Intervention

Pre-treatment scoring (IPSS & VPSS)

Assessment of patients with benign prostatic hyperplasia prior to intervention is essential for establishing the baseline severity of symptoms and planning appropriate management. [REDACTED]

[REDACTED] Furthermore, the pre-treatment symptom score serves as a valuable reference for subsequent post-treatment comparisons, allowing objective assessment of symptom improvement and treatment effectiveness over time.

Post-treatment evaluation

Post-treatment evaluation is a critical component in the management of benign prostatic hyperplasia, as it determines the effectiveness of the intervention and guides care. [REDACTED]

[REDACTED]

treatment and post-treatment assessments is essential for evaluating the overall effectiveness of intervention in benign prostatic hyperplasia. By comparing baseline and follow-up scores obtained from IPSS and VPSS, clinicians can determine the extent of symptom improvement and the success of treatment (63). A significant reduction in scores indicates effective relief of obstruction and improvement in urinary function, while minimal change may suggest inadequate response. Comparative analysis also helps in assessing the agreement between different scoring systems in

[REDACTED]

[REDACTED]

[REDACTED] similarly recommended considering prostate volume and PSA during selection of medical or surgical therapy, particularly for men with demonstrable prostatic enlargement (34).

Comparison of Qmax and Qavg Between Medical and Surgical Intervention Groups

In the present study, both medical and surgical treatment produced improvement in objective urinary flow parameters. [REDACTED]

[REDACTED]

██████████ Collectively, these studies support the present finding that improvement in urinary flow accompanies reduction in LUTS, with surgery generally producing the larger flow-rate gain.

Comparison of Assistance Required for Completion of IPSS and VPSS

In the present study, only ██████████ participants could complete the International Prostate Symptom Score without assistance, whereas ██████████ could complete the Visual Prostate Symptom Score independently. ██████████

██████████ Collectively, these studies strongly support VPSS as a more independently usable and potentially less assistance-dependent instrument than IPSS, particularly among rural and less-educated men.

Challenges in Rural Population

Low literacy levels represent a major challenge in the evaluation and management of benign prostatic hyperplasia in rural populations. [REDACTED]

[REDACTED]

[REDACTED] These challenges are especially pronounced among elderly individuals, in whom age-related cognitive decline, visual impairment, and lower educational attainment can further compromise the accurate completion of conventional symptom assessment tools such as the International Prostate Symptom Score (IPSS).

Difficulty in questionnaire-based assessment

Questionnaire-based assessment, which forms the basis of many symptom scoring systems, poses significant challenges in rural populations due to difficulties in comprehension, interpretation, and response selection. [REDACTED]

discussing urinary symptoms openly in the presence of others, which may lead to underreporting (68). Additionally, cultural and language differences may further complicate understanding of standardized questionnaires. [REDACTED]

Collectively, these factors can reduce the reliability and consistency of conventional symptom scoring systems, emphasizing the importance of simple, visual, and easily understandable assessment tools such as the Visual Prostate Symptom Score (VPSS), particularly in rural and low-literacy populations.

Delayed presentation

Delayed presentation is a common issue in rural populations and significantly affects the clinical course and management of benign prostatic hyperplasia. [REDACTED]

[REDACTED]

[REDACTED] Such delayed presentation reduces the opportunity for early diagnosis and timely intervention, which could otherwise alleviate symptoms, improve quality of life, and prevent disease progression.

Need for Comparative Evaluation of VPSS and IPSS

Benign prostatic hyperplasia is highly prevalent among ageing men in India, and its clinical evaluation relies significantly on accurate assessment of lower urinary tract symptoms. [REDACTED]

[REDACTED]

Comparative evaluation of VPSS with IPSS is therefore essential to establish its reliability, validity, and applicability as an effective symptom assessment tool for routine clinical practice, especially in rural populations.

Advantages of VPSS Over IPSS

The Visual Prostate Symptom Score offers a significant advantage over traditional questionnaire-based systems due to its simplicity and ease of understanding. Unlike IPSS, which requires reading, interpretation, and comprehension of written questions, VPSS uses pictorial representations to convey symptom severity.

Furthermore, its ease of administration makes VPSS highly suitable for use in busy outpatient clinics and resource-limited healthcare settings, where rapid, reliable, and patient-friendly symptom assessment is essential.

A A

[REDACTED]

Reduced need for assistance

C **y** **1**

[REDACTED]

[REDACTED] This feature is particularly important in the context of this study, where comparison of scoring systems requires reliable and unbiased data.

Comparison of Individual Lower Urinary Tract Symptom Scores Before and After Medical and Surgical Intervention

In the present study, frequency, nocturia, and weak-stream scores improved after both medical and surgical intervention when assessed using IPSS and VPSS. [REDACTED]

[REDACTED]

[REDACTED] These

findings support the present observation that both modalities improve LUTS, while intervention generally produces greater symptom reduction.

Correlation Between VPSS and IPSS

Symptom correlation

The correlation between Visual Prostate Symptom Score and International Prostate Symptom Score is an important aspect in understanding the reliability and clinical applicability of VPSS as an alternative assessment tool in benign prostatic hyperplasia. [REDACTED]

[REDACTED] The strong agreement between these two scoring systems supports the validity of VPSS as an effective alternative to IPSS, particularly for elderly patients and individuals with limited literacy, while maintaining comparable clinical accuracy in the assessment of lower urinary tract symptoms.

Agreement in severity grading

In addition to symptom correlation, agreement in severity grading between VPSS and IPSS is another critical factor that determines the clinical usefulness of VPSS. [REDACTED]

[REDACTED]

The consistency observed between VPSS and IPSS supports their reliability in routine clinical assessment and further reinforces the role of VPSS as a practical alternative to IPSS, particularly in populations with limited literacy and in resource-constrained healthcare settings.

Comparison of Pre- and Post-Intervention Quality-of-Life Scores

In the present study, quality of life improved significantly following both medical and surgical treatment. [REDACTED]

[REDACTED]

[REDACTED] Collectively, these studies support the present finding that effective BPH treatment improves quality of life and that VPSS provides a valid visual alternative to IPSS for monitoring such improvement.

Correlation of Symptom Scores with Objective Parameters

[REDACTED]

The assessment of benign prostatic hyperplasia involves both subjective symptom evaluation and objective measurement of urinary flow, and understanding the relationship between these two is essential for comprehensive clinical evaluation. [REDACTED]

[REDACTED]

[REDACTED]

However, some variability in this relationship may occur because uroflowmetry findings can also be influenced by factors such as detrusor muscle function, bladder contractility, voided volume, and other patient-related physiological differences.

Clinical relevance

The correlation between symptom scores and objective parameters such as uroflowmetry has significant clinical relevance in the management of benign prostatic hyperplasia. [REDACTED]

[REDACTED]

It supports the use of VPSS as a reliable alternative to IPSS in evaluating patients before and after intervention.

Comparison of Pre- and Post-Intervention IPSS and VPSS Median Scores Between Medical and Surgical Groups

In the present study, both medical and surgical interventions produced statistically significant reductions in symptom severity on IPSS and VPSS.

Collectively, these studies agree that medical therapy improves LUTS, while surgical or minimally invasive intervention generally produces a larger reduction in symptom scores.

Comparison of IPSS and VPSS Improvement Between Medical and Surgical Groups

In the present study, symptom improvement was significantly greater following surgical intervention than after medical management.

[REDACTED]

Collectively, these findings agree with the present study that medical and surgical treatment improve LUTS, but intervention generally produces a larger reduction.

Need for simple and reliable tool

The management of benign prostatic hyperplasia requires consistent and accurate assessment of symptoms over time, making the availability of a simple and reliable tool essential. [REDACTED]

[REDACTED]

[REDACTED] In the context of this study, identifying such a tool is essential for improving the overall management of BPH in rural populations.

Rationale of the Present Study

The International Prostate Symptom Score is widely accepted as the standard tool for assessing

lower urinary tract symptoms in patients with benign prostatic hyperplasia. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Identifying this gap is essential for improving patient evaluation and ensuring that clinical tools are adapted to the population being served.

Potential role of VPSS as an alternative

The Visual Prostate Symptom Score has emerged as a promising alternative to traditional questionnaire-based tools, particularly in populations where literacy and comprehension pose significant challenges. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

Establishing VPSS as a reliable alternative would have significant implications for improving clinical practice in resource-limited settings.

Strengths of the Study

1. The study prospectively compared both the Visual Prostate Symptom Score (VPSS) and the International Prostate Symptom Score (IPSS) in the same cohort of patients before and after intervention for benign prostatic hyperplasia (BPH).

[REDACTED]

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10. The findings contribute valuable Indian data regarding the comparative performance of VPSS and IPSS before and after BPH treatment.

Limitations of the Study

1. The study was conducted at a single tertiary care centre, which may limit the generalizability of the findings to other healthcare settings.

[REDACTED]

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10. Long-term responsiveness of VPSS and IPSS following continued medical therapy or after late postoperative follow-up was not assessed.

CONCLUSION

CONCLUSION

The present study compared the Visual Prostate Symptom Score (VPSS) with the International Prostate Symptom Score (IPSS) in 100 Indian rural men with benign prostatic hyperplasia before and after intervention. [REDACTED]

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██████████ Owing to its ease of administration, ability to be completed independently, and comparable assessment of symptom severity before and after intervention, VPSS has considerable potential for routine use in primary care and rural healthcare settings.

SUMMARY

SUMMARY

[illegible]

[REDACTED]

[REDACTED]

[REDACTED] The findings support the use of VPSS as a reliable, simple, and practical alternative to IPSS for evaluating lower urinary tract symptoms and monitoring treatment outcomes in Indian rural men with benign prostatic hyperplasia, particularly in settings where literacy may limit the applicability of conventional symptom questionnaires.

BIBLIOGRAPHY

BIBLIOGRAPHY

- [REDACTED]

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Row	Bar 1 Length (approx. %)	Bar 2 Length (approx. %)	Bar 3 Length (approx. %)
1	100	100	100
2	100	100	100
3	100	100	100
4	100	100	100
5	100	100	100
6	100	100	100
7	100	100	100
8	100	100	100
9	100	100	100
10	100	100	100
11	100	100	100
12	100	100	100

ANNEXURES

ANNEXURES-I.

ANNEXURES-II

MASTERCHART