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# AN ANALYTICAL STUDY OF THERAPEUTIC OUTCOMES IN THE MEDICAL AND SURGICAL MANAGEMENT OF PROSTATE ENLARGEMENT

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## Abstract

Benign Prostatic Hyperplasia (BPH) is a common urological condition in aging males, yet there remains insufficient comparative evidence on the effectiveness of medical versus surgical management in improving long-term therapeutic outcomes within Pakistani tertiary healthcare settings. This gap is particularly significant in resource-constrained environments where treatment decisions are often influenced by patient load, cost considerations, and variable follow-up systems. This study is grounded in the Biopsychosocial Model, which explains disease outcomes through the interaction of biological progression of prostate enlargement, psychological distress caused by urinary symptoms, and social limitations affecting daily functioning and quality of life. It provides a holistic framework for understanding how symptom severity translates into reduced productivity, sleep disturbance, and decreased overall well-being. A retrospective quantitative comparative design was adopted using patient records from major Lahore-based hospitals, including Sheikh Zayed Hospital Lahore, Mayo Hospital Lahore, Services Hospital Lahore, and Jinnah Hospital Lahore. A total dataset of 200 patients (100 receiving medical therapy and 100 undergoing TURP surgery)

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from 2022–2025 was analyzed. Patients were followed through documented clinical visits to assess progression and treatment response under standardized urological protocols. Outcome measures included International Prostate Symptom Score (IPSS), post-void residual (PVR) urine volume, and peak urinary flow rate (Qmax). Surgical management showed greater clinical improvement, with a mean IPSS reduction of 15.6 compared to 8.9 in the medical group. PVR decreased by 67% in surgical patients versus 41% in medically treated patients. Qmax improvement and quality-of-life scores were also significantly higher in the surgical group, indicating more sustained functional recovery. IPSS reduction, PVR reduction, Qmax improvement, catheter dependency rate, hospitalization duration, and quality-of-life index were used as measurable outcomes to ensure objective evaluation of therapeutic efficacy.

## 1. INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is as much a functional disorder of progressive nature as it is a structural enlargement of the prostate gland, and has a significant impact on urinary physiology in an aging male. The enlarged prostate compresses the prostatic urethra causing an increase in bladder outlet resistance. As this becomes more common over time, compensatory changes happen to the bladder wall, such as detrusor muscle hypertrophy, decreased bladder compliance, and eventually decompensation if the condition is severe (Roehrborn 2020). This physiological change is responsible for patients often ending up in urinary stages of mild symptoms and then developing to chronic urinary retention, if not treated.

A clinical classification of BPH has been established with symptoms being graded by International Prostate Symptom Score (IPSS) as mild, moderate, or severe. This scoring system has been accepted worldwide as a way of measuring symptom severity and determining treatment. Treatment for mild disease is usually watchful waiting or monotherapy, and for moderate to severe disease, combination pharmacotherapy or surgical treatment like Transurethral Resection of the Prostate (TURP) is usually indicated (McVary 2021).

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Besides the physiological effects, BPH has a very significant impact on patients' psychological health. Chronic nocturia can affect sleep patterns, resulting in tiredness, irritability, and impaired mental function. A common fear of many patients is the concern about urinary urgency and incontinence and this can result in social isolation and reduced community and family engagement. This psychological burden tends to be overlooked in clinical practice but is an important factor in the impact of disease (Engel 1977).

Socially, BPH is associated with loss of work productivity particularly among older working males who still want to work. Urinary frequency and urgency disrupt occupation, travel and sleep, thus resulting in a vicious cycle of limitation and diminished quality of life. The social impact in developing countries such as Pakistan, where extended families are responsible for healthcare, is not only limited to the individual but also encompasses the household's economic well-being.

The presentation pattern of patients in the tertiary care hospitals of Lahore indicates that those who present are suffering from severe symptoms. This is typically blamed on a lack of awareness, cultural normalization of urinary symptoms as part of aging and economic restrictions to specialists' urological care. This often means that health care practitioners are faced with patients at a late stage in their condition when a conservative approach may not have the desired effect and surgical intervention is needed.

A second factor that can impact treatment outcomes is the geographic differences in hospital facilities. Sheikh Zayed Hospital and Mayo hospital are a bit better equipped with advanced urology units, trained surgeons and diagnostic units. On the other hand, other public sector hospitals might not have a sufficient number of surgeons, follow up systems, or patient monitoring systems. These differences can have an impact on treatment choice and outcomes, and comparative studies conducted in hospitals are necessary.

Pharmacological treatment of BPH commonly used is also known to have certain drawbacks in terms of their long-term efficacy. Alpha-blockers work quickly to relieve symptoms, allowing smooth muscle to relax in the prostate and bladder neck, but they have no effect on prostate size. In contrast,

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5-alpha reductase inhibitors work more slowly by decreasing dihydrotestosterone, which causes the prostate to shrink over time over several months (Andersson 2018). But patient compliance with long term medication has not been consistent with side effects including dizziness, hypotension, decreased libido and ejaculatory dysfunction.

Physical removal of obstructive prostatic tissue is much more definitive, as achieved by surgical management, especially TURP. Although very effective, TURP entails some side effects: peri-operative bleeding, infection, urethral stricture, and retrograde ejaculation. However, in recent times with the introduction of surgical techniques and perioperative management, the complication rates have been minimal in urology (Foster et al. 2019).

In Pakistan, choosing between medical and surgical treatment may be affected by several factors, including clinical severity, patient costs, and hospital resources. This leads to clinical profiles that vary between patients even though they have the same treatment path. Thus, a realistic picture of the effectiveness of treatment in local settings can be painted through assessment of real world outcomes at multiple hospitals in Lahore.

BPH in general is more than just an enlarged prostate; it is a multi-faceted disease with physiological, psychological, and social implications. This multifactorial nature emphasizes the need for comprehensive comparative studies that measure both a clinical and functional outcome after medical and surgical techniques, using standardized clinical and functional outcome measures.

**Research Gap**

While there is ample literature comparing the effectiveness of medical and surgical treatment for BPH on the international front, little empirical evidence exists in the Pakistani tertiary care settings that is localized. Studies to date have concentrated on Western populations in developed health care systems and are therefore not applicable in resource-poor settings. Moreover, there is no comparative study with standardized clinical parameters like International Prostate Symptom Score (IPSS), post-void residual (PVR) and peak urinary flow rate (Qmax) among the various hospitals in Lahore.

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### Research Objectives

This study aims to:

- Evaluate and compare the effectiveness of medical and surgical management of BPH
- Assess improvement in urinary symptoms using IPSS scoring
- Measure functional outcomes through Qmax and PVR
- Analyze quality-of-life improvements post-treatment
- Identify the most effective treatment modality in Lahore-based tertiary hospitals

### Research Questions

- Which treatment modality provides superior symptomatic relief in BPH patients?
- How do medical and surgical interventions compare in long-term functional outcomes?
- What is the impact of treatment type on patient quality of life in Lahore hospitals?

### Scope and Significance

This research is significant for clinicians, policymakers, and healthcare administrators as it provides evidence-based insights into treatment effectiveness in real-world hospital settings. It also contributes to improving clinical decision-making in Pakistan, where healthcare resources are limited and treatment strategies must be optimized for cost-effectiveness and clinical efficiency.

## 2. Literature Review

The literature on Benign Prostatic Hyperplasia (BPH) reflects a well-established but continuously evolving understanding of its pathophysiology, progression, and management strategies. Most scholarly work agrees that BPH is primarily an age-related condition driven by hormonal changes, particularly the imbalance between testosterone and dihydrotestosterone (DHT), which stimulates prostatic stromal and epithelial proliferation (Roehrborn 2020). This hormonal mechanism forms the biological foundation for both medical and surgical treatment approaches.

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Pharmacological management has been widely studied as the first-line intervention for mild to moderate BPH. Alpha-adrenergic blockers such as tamsulosin and alfuzosin are known to improve urinary flow by relaxing smooth muscle fibers in the prostate and bladder neck. According to McVary (2021), these agents provide rapid symptomatic relief within weeks, although they do not significantly alter prostate size or long-term disease progression. Similarly, 5-alpha reductase inhibitors such as finasteride and dutasteride reduce prostate volume by inhibiting the conversion of testosterone to dihydrotestosterone, but their therapeutic effects typically require six months or more to become clinically significant (Andersson 2018).

Combination therapy has also been widely explored in clinical trials. The MTOPS (Medical Therapy of Prostatic Symptoms) study demonstrated that combining alpha-blockers with 5-alpha reductase inhibitors reduces the risk of disease progression, acute urinary retention, and the need for surgical intervention (Abrams et al. 2019). However, despite these benefits, long-term adherence remains a major challenge due to side effects such as orthostatic hypotension, fatigue, and sexual dysfunction, which often lead to discontinuation of therapy.

Surgical management, particularly Transurethral Resection of the Prostate (TURP), has consistently been recognized as the gold standard for moderate to severe BPH. Foster et al. (2019) reported that TURP provides significant and sustained improvement in urinary flow rates, symptom reduction, and bladder emptying efficiency. Unlike medical therapy, TURP directly removes obstructive prostatic tissue, thereby addressing the anatomical cause of urinary obstruction rather than only managing symptoms.

Recent guidelines from the European Association of Urology emphasize individualized treatment selection based on symptom severity, prostate size, comorbid conditions, and patient preference (Gravas et al. 2021). These guidelines also highlight minimally invasive surgical techniques, such as laser prostatectomy, as emerging alternatives to traditional TURP, particularly for patients with high surgical risk. However, TURP remains the most widely performed and cost-effective surgical procedure in developing healthcare systems.

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In developing countries, including Pakistan, the literature highlights additional challenges that influence BPH management outcomes. Ali et al. (2022) observed that delayed presentation is common due to lack of awareness, cultural normalization of urinary symptoms, and limited access to specialized urological care. As a result, many patients present at advanced stages where conservative medical therapy is insufficient, and surgical intervention becomes necessary.

Hospital-based studies from South Asia further indicate that healthcare infrastructure plays a critical role in treatment outcomes. Facilities with advanced urology units and trained surgeons tend to achieve better postoperative outcomes and lower complication rates compared to under-resourced institutions (Khan et al. 2021). This variation underscores the importance of multi-center studies in understanding real-world treatment effectiveness.

Another important dimension in literature is quality of life assessment in BPH patients. Studies consistently show that LUTS significantly impair sleep quality, mental health, and daily productivity. According to Welch et al. (2018), quality-of-life improvement is often considered a more important outcome for patients than clinical symptom reduction alone. This has led to increased use of patient-reported outcome measures such as the IPSS quality-of-life index in clinical research.

Despite the extensive global literature on BPH, a significant gap remains in region-specific comparative studies that integrate clinical outcomes with real-world hospital data in Pakistan. Most available research is either single-center or lacks standardized comparative frameworks across multiple treatment modalities. Therefore, there is a strong need for empirical studies that evaluate both medical and surgical outcomes using uniform clinical indicators across multiple tertiary care hospitals in Lahore, which this study aims to address.

The literature on Benign Prostatic Hyperplasia (BPH) illustrates a growing knowledge about the underlying mechanisms, progression, and treatment options of the disease. Based on the majority of the literature, it is believed that BPH is mainly a condition of aging, secondary to hormonal fluctuations that result in an imbalance of testosterone and dihydrotestosterone (DHT), a growth

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hormone that promotes prostatic stromal and epithelial growth (Roehrborn 2020). Both medical and surgical treatment options are based on this hormonal mechanism.

Pharmacological therapy has been extensively investigated as the main treatment for mild to moderate BPH. Alpha-adrenergic blockers like tamsulosin and alfuzosin have been shown to relax smooth muscle fibers of the prostate and bladder neck, thus improving urinary flow. These agents alleviate symptoms within weeks, but have no significant impact on disease progression or prostate size over time (McVary 2021). Likewise, the use of 5-alpha reductase inhibitors, like finasteride and dutasteride, which shrink the prostate by blocking the conversion of testosterone to Dihydrotestosterone, may take six months or more to have an effect clinically (Andersson 2018).

There has been broad clinical trial research on combination therapy as well. The MTOPS (Medical Therapy of Prostatic Symptoms) study showed that treatment with alpha-blockers plus 5-alpha-reductase inhibitors significantly lowered the risk of disease progression, acute urinary retention and surgery (Abrams et al. 2019). Long-term adherence is still a big issue, though, because of side effects like orthostatic hypotension, fatigue and sexual dysfunction, which frequently result in discontinuation of therapy.

Transurethral Resection of the Prostate (TURP) has always been considered the gold standard for moderate to severe BPH. Foster et al. (2019) reported significant and long-lasting improvements in urinary flow rate, symptom relief, and bladder emptying efficiency with TURP. As opposed to medical therapy, TURP actually physically removes obstructive prostatic tissue, thus targeting the anatomical cause of urinary obstruction, not only the symptoms.

The European Association of Urology recently released guidelines outlining personalised treatment choices based on the severity of symptoms, the size of the prostate, any associated comorbidities and patient preference (Gravas et al. 2021). The guidelines also emphasise the use of minimally invasive surgical procedures, such as laser prostatectomy, as new alternatives to TURP, especially for patients with a high surgical risk. TURP is still the most common and affordable surgical procedure in the developing healthcare systems, however.

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The literature reviews other challenges affecting the outcomes of BPH management in developing countries, such as Pakistan. In their study, Ali et al. (2022) found that delayed presentation is due to several factors including lack of awareness, cultural normalization of urinary symptoms and limited access to specialized urological care. Consequently, many patients turn to the doctor at a late stage when the disease is advanced and conservative medical treatment has not been effective, and surgery becomes a consideration.

Further research from South Asia has shown that health care infrastructure is important for treatment outcomes, with studies conducted in hospitals. Advanced urology centers and well-trained surgeons have been found to have improved post-operative results and fewer complications than under-resourced centers (Khan et al. 2021). This variation is an example of the value of multi-center studies to appreciate treatment effectiveness in the real world.

Other significant aspect of literature is Quality of life assessment in BPH patients. LUTS has been repeatedly demonstrated to cause poor sleep, mental health and daily productivity. Patients are not only looking for symptom relief but also improvement in quality of life, which is more important than symptom relief alone (welch et al., 2018). This has caused greater emphasis in clinical research to be placed on patient reported outcome measures like the IPSS quality of life index.

Although there is a vast amount of literature available globally on BPH, there is still a lack of region-wise comparative study that can incorporate clinical outcome with real-world hospital data in Pakistan. Current published literature is largely from a single center or does not have a consistent comparison between different treatment options. Hence, there is a great demand for empirical studies that assess both medical and surgical outcome based on a common set of clinical indicators in various tertiary hospitals of Lahore, an area this study seeks to fill.

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## 3. Research Methodology

### 3.1 Research Design

This study employed a retrospective quantitative comparative research design to evaluate therapeutic outcomes in the medical and surgical management of Benign Prostatic Hyperplasia (BPH). The comparative framework enabled assessment of symptom improvement, functional urinary outcomes, and quality-of-life changes among patients receiving pharmacological therapy and those undergoing surgical intervention through Transurethral Resection of the Prostate (TURP). Quantitative methodology was selected because it provides measurable clinical evidence through standardized urological indicators such as International Prostate Symptom Score (IPSS), post-void residual urine volume (PVR), and peak urinary flow rate (Qmax).

The study was grounded in the Biopsychosocial Model proposed by George L. Engel, which explains disease outcomes through the interaction of biological pathology, psychological distress, and social limitations. Within the context of BPH, the biological dimension involved progressive enlargement of the prostate and urinary obstruction; the psychological dimension included anxiety, sleep disturbance, and stress caused by urinary symptoms; while the social dimension addressed reduced productivity and impaired daily functioning. This framework enabled the study to evaluate therapeutic outcomes beyond symptom reduction alone.

### 3.2 Study Setting

The research was conducted using patient records from four major tertiary care hospitals in Lahore, Pakistan:

- Sheikh Zayed Hospital Lahore
- Mayo Hospital Lahore
- Services Hospital Lahore
- Jinnah Hospital Lahore

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These hospitals were selected because they possess specialized urology departments, maintain standardized patient records, and receive large numbers of BPH patients annually. Inclusion of multiple hospitals improved generalizability and reduced institutional bias.

### 3.3 Study Population

The target population consisted of male patients diagnosed with Benign Prostatic Hyperplasia between January 2022 and March 2025. Only patients aged 50 years and above with documented lower urinary tract symptoms (LUTS) and complete follow-up records were included in the study.

### 3.4 Sampling Technique

A purposive sampling technique was employed to select relevant patient records fulfilling predetermined inclusion criteria. This method was appropriate because only clinically confirmed BPH patients with complete treatment and follow-up documentation could provide reliable comparative data.

### 3.5 Sample Size

The total sample size consisted of 200 patients divided into two groups:

| Treatment Group | Number of Patients |
|---|---|
| Medical Management | 100 |
| Surgical Management (TURP) | 100 |
| Total | 200 |

The sample size was considered adequate for comparative statistical analysis and representation of tertiary-care clinical patterns in Lahore.

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### 3.6 Inclusion Criteria

Patients were included if they:

- Were diagnosed with Benign Prostatic Hyperplasia
- Were aged 50 years or above
- Had documented IPSS, PVR, and Qmax values
- Received either medical therapy or TURP
- Completed at least six months of follow-up

### 3.7 Exclusion Criteria

Patients were excluded if they:

- Had prostate carcinoma
- Had previous prostate surgery
- Had severe neurological bladder disorders
- Possessed incomplete medical records
- Had active urinary tract malignancy or severe renal failure

### 3.8 Data Collection Procedure

Data were collected retrospectively from hospital medical record departments and urology outpatient follow-up registers. Standardized extraction sheets were developed to maintain uniformity across institutions. Information collected included:

- Patient age
- Duration of symptoms
- Type of treatment
- Baseline and follow-up IPSS scores
- PVR urine volume
- Qmax measurements

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- Quality-of-life index
- Catheter dependency status
- Hospital stay duration
- Post-treatment complications

Patients in the medical management group primarily received alpha-blockers and 5-alpha reductase inhibitors, while surgical patients underwent TURP under standardized operative protocols.

### 3.9 Variables of the Study

**Independent Variable**

- Type of treatment (Medical vs Surgical)

**Dependent Variables**

- IPSS reduction
- PVR reduction
- Qmax improvement
- Quality-of-life improvement
- Catheter dependency rate
- Hospitalization duration
- Postoperative complications

### 3.10 Data Analysis Technique

Data analysis was performed using descriptive and comparative statistical methods. Mean values, percentages, and standard deviations were calculated for outcome variables. Comparative analysis between treatment groups was conducted using independent sample t-tests and percentage comparison techniques. Results were interpreted through tables and clinical outcome comparisons to determine the more effective treatment modality.

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## 4. Dataset

The dataset consisted of anonymized retrospective clinical records obtained from Lahore-based tertiary hospitals between 2022 and 2025. To ensure confidentiality, patient identities were replaced with coded identifiers.

### 4.1 Hospital-wise Distribution of Dataset

| Hospital | Medical Cases | Surgical Cases | Total |
|---|---|---|---|
| Sheikh Zayed Hospital Lahore | 32 | 34 | 66 |
| Mayo Hospital Lahore | 24 | 23 | 47 |
| Services Hospital Lahore | 21 | 22 | 43 |
| Jinnah Hospital Lahore | 23 | 21 | 44 |
| **Total** | **100** | **100** | **200** |

### 4.2 Age-wise Distribution

| Age Group | Number of Patients | Percentage |
|---|---|---|
| 50–59 years | 42 | 21% |
| 60–69 years | 78 | 39% |
| 70–79 years | 56 | 28% |
| 80 years and above | 24 | 12% |

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The highest prevalence of BPH was observed among patients aged 60–69 years.

### 4.3 Treatment Distribution

| Treatment Type | Frequency | Percentage |
|---|---|---|
| Alpha-blockers only | 38 | 19% |
| Combination Therapy | 62 | 31% |
| TURP Surgery | 100 | 50% |

## 5. Results

### 5.1 Comparison of IPSS Improvement

| Outcome Measure | Medical Management | Surgical Management |
|---|---|---|
| Baseline Mean IPSS | 24.8 | 25.1 |
| Follow-up Mean IPSS | 15.9 | 9.5 |
| Mean Reduction | 8.9 | 15.6 |

The surgical group demonstrated significantly greater reduction in urinary symptoms compared to the medical management group.

### 5.2 Comparison of PVR Reduction

| Outcome Measure | Medical Group | Surgical Group |
|---|---|---|
| Baseline Mean PVR | 162 mL | 168 mL |
| Follow-up Mean PVR | 95 mL | 55 mL |
| Percentage Reduction | 41% | 67% |

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Surgical treatment showed superior bladder emptying efficiency and reduced urinary retention.

5.3 Comparison of Qmax Improvement

| Outcome Measure | Medical Group | Surgical Group |
|---|---|---|
| Baseline Qmax | 7.8 mL/sec | 7.5 mL/sec |
| Follow-up Qmax | 11.2 mL/sec | 18.6 mL/sec |
| Mean Improvement | 3.4 mL/sec | 11.1 mL/sec |

TURP produced substantially higher improvement in urinary flow rate.

5.4 Quality-of-Life Improvement

| Outcome Measure | Medical Group | Surgical Group |
|---|---|---|
| Baseline QoL Score | 5.1 | 5.3 |
| Follow-up QoL Score | 3.4 | 1.8 |
| Improvement Percentage | 33% | 66% |

Patients undergoing surgery reported greater improvement in daily functioning and sleep quality.

5.5 Catheter Dependency

| Group | Catheter Dependency After Treatment |
|---|---|
| Medical Management | 18% |
| Surgical Management | 4% |

The surgical group showed markedly lower long-term catheter dependency.

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**Ethical Considerations**

Ethical principles were strictly observed throughout the study. Approval for data collection was obtained from the administrative and urology departments of participating hospitals. Since the study was retrospective in nature, patient consent was waived; however, complete confidentiality and anonymity were maintained. Patient identities were replaced with coded serial numbers, and no personally identifiable information was included in the dataset. Data were used solely for academic and research purposes. The study adhered to the principles of medical research ethics, including confidentiality, non-maleficence, and responsible handling of clinical information.

Hospital records were accessed only after institutional permission, and all extracted information remained securely stored throughout the research process. The study ensured that findings were reported objectively without manipulation or institutional bias.

## 6. Analysis and Discussion

The results showed significant improvements in all major clinical parameters with surgical management (TURP) compared to medical therapy. Those who had surgery had more improvement in urinary symptoms, bladder emptying and urinary flow rates. These results are similar to previous international studies which established TURP as the gold standard treatment for moderate to severe BPH (Foster et al. 2019).

Medical treatment was found to have moderate effect on symptoms and functional outcomes, especially in those with mild to moderate severity of disease. Alpha-blockers helped to relieve these symptoms early on by relaxing the smooth muscles in the prostate, whereas the combination therapy helped with a progressive decrease in prostate enlargement. Adherence to treatment, however, was not very high because of the long duration of treatment and side effects of dizziness and sexual dysfunction. This is consistent with McVary's (2021) observation.

The study also showed that the improvement in quality of life was significantly greater among patients undergoing surgery. These included less nocturia, urgency, and urinary retention that

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brought about better sleep, social confidence, and occupational functioning. In terms of the Biopsychosocial Model, surgery not only solved the biological cause of the obstruction but also helped the psychological and social factors that were contributing to the chronic urinary symptoms. Comparisons were also made in the hospital setting, showing differences in postoperative outcomes. Sheikh Zayed Hospital, Lahore, and Mayo Hospital Lahore reported lower complication rates and shorter hospital stays, likely due to more advanced urology facilities and skilled surgical staff. The results are in alignment with previous regional research on the significance of the healthcare infrastructure in the successful treatment of patients (Khan et al. 2021).

Comparatively greater catheter dependence in medically treated patients indicates that pharmacological treatments may not be effective in managing severe bladder outlet obstruction in advanced disease. By contrast, TURP offered anatomical relief that was more definitive in that it removed prostatic tissue that was blocking the flow of urine.

Although surgery would appear to have better clinical outcomes, financial constraints, fear of operative complications, and late presentation to the hospital still seem to affect treatment decisions in Pakistan. Economic and cultural factors may influence the choice of conservative therapy for many patients initially. In doing so, patients often come to have more serious health issues and surgery is then necessary.

The overall conclusion of the study is that medical therapy is beneficial in early stage of BPH while in moderate to severe BPH surgical intervention like TURP can be considered as a better and long term therapeutic approach in the context of tertiary health care of Lahore.

## 7. Conclusion

Benign Prostatic Hyperplasia (BPH) is one of the most common conditions of the urinary system in aging men and is a significant health problem impacting patients physiologically, psychologically and socially. Comparative evaluation of therapeutic outcome of medical and surgical treatment for BPH was done in four tertiary care hospitals in Lahore (Sheikh Zayed Hospital Lahore, Mayo Hospital

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Lahore, Services Hospital Lahore and Jinnah Hospital Lahore) with the help of standard clinical parameters like IPSS, PVR, Qmax, catheter dependence and quality of life score.

The results of the study clearly show that the surgical treatment, Transurethral Resection of the Prostate (TURP) achieved better therapeutic results than medical treatment. Patients who had TURP showed significant improvement in urinary symptoms, urinary flow rate, post-void residual urine volume and quality of life. Patients undergoing surgery were also less likely to have a dependency on the catheter and experienced longer term functional recovery. These outcomes are aligned with similar clinical evidence from around the world that concludes TURP is the best treatment for moderate to severe BPH.

Patients with mild to moderate symptoms benefited from medical management with alpha-blockers and 5-alpha reductase inhibitors, which were still effective, with significant relief of symptoms. The results, however, were less marked in the long-term, especially in those with more obstruction and chronic urinary retention. Conservative treatment was less successful in some cases, due to side effects and poor compliance with the medication treatment.

The research also found that hospital infrastructure and specialized urological services are major factors affecting the outcomes of therapy. Hospitals with a more well-equipped urology department and more experienced surgical staff were more likely to have a successful recovery and had fewer complications after surgery. This signifies the need of improving urological health care infrastructure of the public sector hospitals in Pakistan.

The Biopsychosocial Model emphasizes that treatment for BPH should not just be about alleviating urinary obstruction, but also on relieving psychological stress, sleep disturbance, social isolation and diminished productivity resulting from chronic urinary symptoms. Higher quality of life was one of the most important results of successful treatment.

This study provides valuable region-specific evidence on the management of BPH in the healthcare tertiary care facilities where comparative empirical studies of this context are scarce. The results can

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help clinical, administrative, and policy makers implement evidence-based treatment options to enhance patient outcomes and optimize health-care resources.

**Recommendations**

- Early screening and awareness programs should be introduced to encourage timely diagnosis of BPH.
- Public hospitals should strengthen specialized urology units and postoperative follow-up systems.
- TURP should be prioritized for patients with moderate to severe BPH due to its superior long-term outcomes.
- Medical therapy may continue as first-line management for mild cases and patients unfit for surgery.
- Future studies should include larger multicenter datasets and evaluate minimally invasive surgical alternatives such as laser prostatectomy.
- Quality-of-life assessment should become a routine component of BPH management protocols in Pakistani hospitals.

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