

# A clinical evaluation of *Kanchanara Guggulu* and *Bala Taila Matra Basti* in the management of *Mutraghata* with special reference to benign prostatic hyperplasia

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## Abstract

**Background:** *Mutraghata* a disease of *Mutravaha Srotasa* (urinary system) described in Ayurveda, closely resembles with benign prostatic hyperplasia (BPH) of the modern medicine. It affects man above the age of 40 years. Conservative management with hormonal therapy, open prostatectomy and TURP are the options available in modern medicine. In Ayurveda, the drugs having *Vata Kapha* pacifying action, *Shothahara* (anti-inflammatory) and *Mutrala* (diuretic) are recommended for its management. **Aim:** The aim of this study was to evaluate the clinical efficacy of *Kanchanara Guggulu* orally and *Bala Taila Matra Basti* in the management of *Mutraghata* (BPH). **Materials and Methods:** A total of 32 selected patients were divided into two groups. In group A, *Bala Taila* 60 ml, *Matra Basti*, once a day, was administered just before breakfast for 21 days. In group B, *Bala Taila* (60 ml), *Matra Basti*, once a day, was administered just before breakfast for 21 days and *Kanchanara Guggulu Vati* 1g (2 tab, 500mg each) three times a day, orally with lukewarm water was administered for 21 days. Findings were recorded in research proforma at weekly interval and patients were followed up till 1 month. **Results:** In group A, the maximum improvement was seen in 3 patients (25.00%), moderate improvement was seen in 8 patients (66.67%) and mild improvement was observed in 1 patient (8.34%). Similarly, in group B, the maximum improvement was found in 10 patients (55.56%), moderate improvement in 7 patients (38.89%) and mild improvement in 1 patient (5.56%) only. None of the patients got complete remission or remained unchanged in either of the groups. Significant reduction was observed in postvoidal residual urine volume and the size of the prostate in both the groups. **Conclusion:** It was concluded that *Matra Basti* along with *Kanchanara Guggulu* orally showed *Mutraghata* comparatively better symptomatic relief as compared to *Matra Basti* alone in cases of *Mutraghata* (BPH).

**Keywords:** Ayurveda, *Mutravaha Srotasa*, Prostate, TURP

## Introduction

In Ayurveda, *Mutraghata* has been defined as a syndrome of obstructive urinary pathology due to deranged function of *Vata Dosh*, particularly *Apana Vata* (a type of *Vata* responsible for excretory function). Twelve types of *Mutraghata*<sup>[1]</sup> are mentioned in *Sushruta Samhita Uttaratantra*. The symptoms such as retention of urine, incomplete voiding, dribbling, hesitancy and incontinence of urine are found in *Mutraghata*; these features probably reflect lower urinary tract symptoms. Based on these features, *Mutraghata* bears a close resemblance with benign prostatic hyperplasia (BPH). BPH is a nonmalignant enlargement of the prostate gland caused by excessive growth of the prostatic tissue and is the most common benign neoplasm of aging men mainly above 40 years.<sup>[2]</sup> The overall incidence rate of BPH

is 15/1000 men/year. The prevalence of histologically diagnosed prostatic hyperplasia increases from 8% in men aged 31–40 years, to 40–50% in men aged 51–60 years and to >80% in men elder than 80 years.<sup>[3]</sup> The management of BPH is either through a surgical approach (e.g. open prostatectomy, transurethral resection of the prostate, cryotherapy etc.) or by conservative treatment using drugs (e.g. hormonal therapy) in the modern medicine. In case of hormonal therapy, though there are some advantages, the complications such as loss of libido, impotence and

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**How to cite this article:** Banothe GD, Mahanta V, Gupta SK, Dudhamal TS. A clinical evaluation of *Kanchanara Guggulu* and *Bala Taila Matra Basti* in the management of *Mutraghata* with special reference to benign prostatic hyperplasia. *Ayu* 2018;39:65-71.

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**DOI:**  
10.4103/ayu.AYU\_117\_15

gynecomastia are unwanted effects encountered in clinical practice. In a surgical procedure, prostatectomy is choice, but it also has many complications like postoperative morbidity, impotence, retrograde ejaculation etc. The other procedure is Transurethral Resection of the Prostate (TURP), which is also not free from complications and recurrence rate is around 15% in 5–8 years after TURP.<sup>[4]</sup> In Ayurveda, *Sushruta* has given regimen consisting of *Kashaya* (decoction), *Kalka* (paste), *Ghrita* (medicated ghee), *Kshara* (alkalizers), etc. to combat this condition.<sup>[5]</sup> The formulations having property of pacification of *Vata*, *Vatanulomana*, anti-inflammatory, scraping and diuretic effect and therapeutic procedures such as *Matra Basti* and *Uttara Basti* are recommended to normalize the function of urinary system by reducing the size of the prostate, clearing the bladder outlet obstruction and to enhance the tone of urinary bladder. *Matra Basti* is treatment for vitiated *Vata* where no strict restrictions are required. Hence, this research work was planned to assess the efficacy of *Kanchanara Guggulu*, which has *Vata-Kapha* pacifying, anti-inflammatory, cyst dissolving properties and *Bala Taila Matra Basti* in the management of *Mutraghata* (BPH).

### Aims and objectives

The aim of this study was to evaluate the clinical efficacy of *Kanchanara Guggulu* (KG) orally and *Bala Taila Matra Basti* in the management of *Mutraghata* with special reference to BPH.

### Materials and Methods

The patients having signs and symptoms of *Mutraghata* (BPH) were selected from the outpatient department and inpatient department of Shalya Tantra. The trial formulations *Bala Taila* and *Kanchanara Guggulu* (KG) were prepared and supplied by Pharmacy, Gujarat Ayurved University, Jamnagar. Before registering the patients in clinical trial, clearance from the Institutional Ethics Committee was obtained, vide letter no. PGT/7-A/Ethics/2013-14/1767 Dated 10/09/2013. The trial has been registered in CTRI with registration No. CTRI/2015/07/006010, date of first enrolment was February 19, 2014 and date of completion of the trial was January 20, 2015.

### Inclusion criteria

- Age between 40 and 70 years
- Patients having classical signs and symptoms of *Mutraghata* (BPH).

### Exclusion criteria

- Age below 40 years and above 70 years
- Patients of malignancy, congenital deformities of the urogenital tract or any abdomino-pelvic pathology other than BPH
- Systemic diseases such as uncontrolled systemic arterial hypertension and diabetes mellitus, tuberculosis, paralysis and parkinsonism known cases of heart disease were excluded from the study

### Diagnostic criteria

- Patients having signs as enlarged prostate size and decreased urinary flow rate and symptoms like retention, incomplete voiding, dribbling, hesitancy and incontinence of urine were diagnosed as a case of *Mutraghata* (BPH)
- International Prostate Symptom Score (IPSS) (based on the guidelines of American Urological Association) was used to evaluate subjective complaints of patients before and after the administration of the therapy, average urine flow rate (AUFR) measurement (manually), ultrasonography (USG) findings of the prostate gland and post voidal residual urine (PVRU) volume and per rectal digital examination for the prostate was also done.

### Investigations

- In all patients, the following laboratory and radiological investigations were carried out before and after treatment
- Routine hematological examination: Hb%, complete blood count, erythrocyte sedimentation rate
- Biochemical examination of fasting blood sugar, postprandial blood sugar, serum creatinine, serum alkaline phosphatase and blood urea
- Routine and microscopic examination of urine and stool
- USG abdomen and prostate
- X-ray kidney, ureter, and bladder.

### Trial drugs

1. *Bala Taila* (BT): The contents of *Bala Taila* are *Atibala* (*Abutilon indicum* (L.) Sweet)<sup>[6]</sup> and *Tila Taila* (*Sesamum indicum* L.)<sup>[7]</sup> which were prepared as per the *Snehapaka Kalpana* (classical procedure to prepare medicated oil) and procured from Pharmacy Gujarat Ayurved University, Jamnagar
2. *Kanchanara Guggulu* (KG): It was prepared as per the reference given in *Sharangdhara Samhita*.<sup>[8]</sup>

### Clinical study design

Registered patients by coin-toss method were divided into two groups, group A (*Bala Taila Matra Basti*) and group B (*Bala Taila Matra Basti* and *Kanchanara Guggulu*). All the patients were followed up till 1 month.

- Group A: *Bala Taila Matra Basti* 60 ml once a day, administered to selected 12 patients before breakfast for 21 days
- Group B: *Bala Taila Matra Basti* 60 ml was given once a day, administered to selected 18 patients, before breakfast for 21 days along with *Kanchanara Guggulu* orally 1g (2 tab., 500mg each) three times a day after food with lukewarm water for 21 days.

### Assessment criteria

#### Subjective criteria

- a. Improvement in the symptoms as per the IPSS.<sup>[9]</sup>

#### Objective criteria

- a. Changes in residual urine volume. [Table 1]
- b. Changes in urine flow rate. [Table 2]
- c. Changes in prostatic size as assessed by per rectal digital examination and USG study. [Table 3]

**Table 1: Gradation of residual urine volume**

Post voidal residual urine volume (PVRU)	Gradation
Nil (up to 30 cc)	0
30–60 cc	1
60–90 cc	2
90–120 cc	3
>120 cc	4

**Table 2: Gradation of urine flow rate**

Urine flow rate (UFR)	Gradation
Normal or more ( $\geq 15$ ml/s)	0
11–15 ml/s	1
7–11 ml/s	2
3–7 ml/s	3
0–3 ml/s	4

**Table 3: Gradation of prostate size (volume)**

Prostate size as per USG (volume)	Gradation
Up to normal (14–26 cc)	0
26–36 cc	1
36–46 cc	2
46–56 cc	3
>56 cc	4

### Overall assessment criteria

- Complete remission: 100% relief in subjective, objective findings and IPSS parameters
- Maximum improvement: 76%–99% relief in subjective, objective findings and IPSS parameters
- Moderate improvement: 51%–75% relief in subjective, objective findings and IPSS parameters
- Mild improvement: 26%–50% relief in subjective, objective findings and IPSS parameters
- Unchanged: Up to 25% relief in subjective, objective findings and IPSS parameter.

### General observations

- All patients were vegetarian and consuming *Madhura Rasa* (sweet taste) and *Snigdha Guna* (oily) food articles, 46.87% of patients were having irregular bowel habit and 37.5% patients had habit of passing hard stool. Maximum 59.37% patients had chronicity of disease up to 1 year [Table 4].
- In the present study, nocturia and increased frequency of micturition was found in 87.50% patients. Similarly, other symptoms such as weak stream, dribbling, incomplete voiding, burning micturition and urgency was observed in 81.25%, 75%, 68.75%, 65.63% and 62.50% of the patients respectively. None of the patients suffered from hematuria or dysuria [Table 5].
- As per per-rectal examination, maximum patients (53.13%) were noted having prostate enlargement of both lobes, oval shaped (84.37%) with smooth surface (100%). The upper

border of the prostate was not approachable in 53.13% patients, median groove of the prostate was palpable in 87.50% and free rectal mucosa and firm consistency of prostate were noted in 100% cases. The size of the prostate gland was mildly enlarged in 59.37% of patients [Table 6].

## Results

### Laboratory investigations

In both of the groups in significant changes were found in most of haematological and biochemical parameters.<sup>[10]</sup> [Table 7]

### Result on International Prostate Symptom Score

Statistically highly significant relief ( $P < 0.001$ ) was recorded in chief complaints like nocturia, increased frequency of micturition, incomplete voiding, dribbling and weak stream, while significant relief ( $P < 0.01$ ) was noted in burning micturition and urgency in group A [Table 8]. Statistically highly significant ( $P < 0.001$ ) result was noted on almost all symptoms in patients of group B [Table 9].

### Result on objective parameters

Statistically highly significant ( $P < 0.001$ ) increase was noted in AUFR and significant ( $P < 0.01$ ) reduction was recorded in prostate size as well as PVRU in group A [Table 10]. Statistically highly significant ( $P < 0.001$ ) effect in reducing PVRU and increasing AUFR and significant ( $P < 0.05$ ) decrease in the size of enlarged prostate gland was noted in patients of group B [Table 11].

### Overall result of therapy (group wise)

In group A, maximum improvement was seen in 3 patients (25.00%), moderate improvement was seen in 8 patients (66.67%), and mild improvement was observed in 1 patient (8.34%) [Table 12]. Similarly, in group B, maximum improvement was found in 10 patients (55.56%), moderate improvement in 7 patients (38.89%) and mild improvement in 1 patient (5.56%) only. None of the patients had complete remission or remained unchanged in either of the groups [Table 13].

### Overall effect of therapy

Maximum improvement i.e. 76.67 % was found in the symptoms like retention of urine, incomplete voiding, dribbling, hesitancy and incontinence of urine. While mild improvement (40.00%) was observed in average urine flow rate (AUFR), post voidal residual urine (PVRU) volume and size of the prostate. [Table 14]

## Discussion

In Ayurveda, *Mutraghata* is a broad term as it covers most of the pathological entities of the urinary system. Total, 12 types of *Mutraghata* are mentioned by *Acharya Sushruta*<sup>[11]</sup> and 13 types by *Acharya Charaka*. *Mutraghata* comprises of two different words, that is, “*Mutra*” means urine and “*Aghata*” means obstructive pathology. The features of *Mutraghata* such as retention of urine (*Mutrasanga*) and pain in suprapubic

region are observed due to obstructive pathology and can be correlated with BPH on the basis of its symptoms and signs. In old age, there is deranged function of *Vata Dosha*, particularly *Apana Vata* which is the prime causative factor and it also disturbs with *Kapha Dosha*. Consequently, vitiated *Vata* and *Kapha Dosha* affect to *Mutravaha Srotasa* and derangements occurs in *Basti* (urinary system) and results in *Mutraghata*. Hence, the drugs having *Vata-Kapha* pacifying property, *Srotoshodhana* (cleaning the channels), *Lekhana* (scraping), *Shophahara* (anti-inflammatory), *Mutrala* (diuretic) and along

with digestive properties are helpful to break the *Samprapti* of *Mutraghata* (BPH).

*Kanchanara Guggulu* is an Ayurvedic formulation having properties of *Vata-Kapha Dosha* pacification, *Lekhana* and *Shothahara* (anti-inflammatory).<sup>[12]</sup> Because of these properties, *Kanchanara Guggulu* may check the changes of prostatic tissues and regulates the urinary function.<sup>[13]</sup> *Matra Basti* is the procedure to control *Vata Dosha*, especially *Apana Vata*.<sup>[14]</sup> All *Acharya* have recommended *Matra Basti* as a line of management of *Mutraghata* to improve urinary function and to remove the obstruction.

Most of the patients in this study (50%) were from the age group of 61–70 years. This age group favors the vitiation of *Vata Dosha* and might be a cause for the development of *Mutraghata*, especially hyperplasia of the prostate gland. Modern science has also reported that benign changes in the prostate gland are more prevalent in sixth and seventh decades of life. Most of the patients had chronicity up to 1 year. In the initial stage, the symptoms of BPH are not severe; hence, the patients ignore the complaints till the condition becomes chronic. *Samashana* (mixing of wholesome food with unwholesome food) was found in the majority of the patients. *Ama* (undigested food) is the causative factor for the manifestation of *Mutraghata* as described by *Charaka* and more formation of *Ama* is seen in the person habitual of *Samashana*. Disturbed sleep was found in maximum number of patients, which might be due to increased frequency of micturition at night. Constipation was found in 37.5% of the patients, which might be due to faulty dietary habits such as *Samashana* and deranged *Apana Vayu*.

In group A, *Bala Taila Matra Basti* provided 84.24% relief in incomplete voiding of urine, 77.42% relief in increased frequency, 77.78% relief in intermittency, 89.47% relief in urgency, 80% relief in weak stream, 84.62% in straining and 69.57% in nocturia. The quality of life was improved in 58.33% of patients. These results were highly significant ( $P < 0.001$ ) in all of the above mentioned symptoms except intermittency, which was statistically significant ( $P < 0.01$ ), whereas in objective findings, the size of the prostate was reduced up to 33.34%. Reduction of 88.89% was found in PVRU and

**Table 4: General observations (n=32)**

Observation	No. of Patients (%)	
Age group	61-70	50%
Religion	Hindu	96.87%
Socio-economic status	Lower Middle Class	75.00%
Nature of work	Physical Labor	53.13%
Marital status	Married	100%
Education (primary level)		84.37%
Dietetic habit	<i>Samashana</i>	81.25%
<i>Koshtha</i> (bowel habit)	<i>Madhyama</i>	84.37%
<i>Agni</i> (digestion state)	<i>Manda</i>	71.87%
Dominancy of <i>Rasa</i> in diet	<i>Madhura Rasa</i>	100%
	<i>Sigdha Guna</i>	93.75
<i>Vaya</i> (age)	<i>Madhyama</i>	53.13%

**Table 5: Symptoms wise distribution as per IPSS**

Symptoms	Group A		Group B		Total	
	n	%	n	%	n	%
Nocturia	10	83.33	18	100.00	28	87.50
Increased frequency	10	83.33	18	100.00	28	87.50
Dribbling	11	91.67	13	72.22	24	75.00
Haematuria	0	00.00	0	00.00	0	00.00
Burning micturition	7	58.33	14	77.78	21	65.63
Dysuria	4	33.33	4	22.22	8	25.00
Incomplete voiding	6	50.00	16	88.89	22	68.75
Weak stream	11	91.67	15	88.33	26	81.25
Urgency	7	58.33	13	72.22	20	62.50

\*IPSS: International Prostate Symptom Score

**Table 6: Per rectal digital examination findings (n=32)**

P/R Digital Findings		Group A		Group B		Total	
		n	%	n	%	n	%
Enlargement of lobes	Bilateral	6	50.00	11	55.00	17	53.13
Shape	Oval	10	83.33	17	85.00	27	84.37
Surface	Smooth	12	100.00	20	100.00	32	100.00
Upper border of gland	Unreached	5	41.67	12	60.00	17	53.13
Median groove	Palpable	10	83.33	18	90.00	28	87.50
Mobility	Fixed	12	100.00	20	100.00	32	100.00
Rectal mucosa	Fixed	0	00.00	0	00.00	0	00.00
Consistency	Firm	12	100.00	20	100.00	32	100.00
Tenderness	Absent	12	100.00	20	100.00	32	100.00
Enlargement of gland	Mild	8	66.67	11	55.00	19	59.37

**Table 7: Effect of therapy on investigations in Group B: (n=18)**

Parameters	Mean Score		%	SD	SE	T	P
	BT	AT	Relief				
Hemoglobin (%)	13.42	13.67	1.90	0.371	0.087	-2.92	0.010
Total WBC ( /cumm)	6916.66	7183.33	3.86	1038.09	244.68	-1.09	0.291
ESR (mm/hr)	25.78	19.33	25.00	13.06	3.08	2.09	0.052
FBS (mg/dl)	103.94	103.0	-0.91	13.36	3.15	0.3	0.768
PPBS (mg/dl)	139.1	132.6	4.63	18.63	4.39	1.47	0.160
Sr. Alkaline Phosphatase (IU/L)	52.05	46.83	10	12.55	2.96	1.765	0.096
Blood Urea (mg/dl)	30.44	27.22	10.58	7.24	1.71	1.89	0.086
Sr. Creatinine (mg/dl)	1.15	1.16	-0.97	0.178	0.042	-0.265	0.794
Urine Albumin (gm/dl)	1.43	1.43	0.0	0.816	0.309	0.0	1.00
Urine Sugar (mmol/L)	1.25	1.50	-20.0	0.957	0.479	-0.52	0.638
Urine Pus Cells ( /HPF)	9.36	9.86	-5.34	13.35	3.57	-0.14	0.891

\*\* BT- before treatment, AT- after treatment, SD- standard deviation, SE- standard error

**Table 8: Effect of therapy on IPSS in Group-A (n=12)**

International Prostate Symptoms Score (IPSS)	Mean Score		n	%	SD (±)	SE (±)	t	P
	BT	AT	Relief					
Incomplete emptying	1.4	0.2	12	84.24	0.866	0.25	5.0	<0.001
Frequency	2.5	0.5	12	77.42	0.603	0.174	11.48	<0.001
Intermittency	1.2	0.2	7	77.78	0.577	0.218	4.58	0.004
Urgency	2.1	0.2	9	89.47	1.054	0.351	5.376	<0.001
Weak stream	1.8	0.3	11	80.00	0.522	0.157	9.24	<0.001
Straining	1.6	0.2	8	84.62	0.744	0.263	5.23	0.001
Nocturia	2.0	0.6	11	69.57	0.934	0.282	5.164	<0.001
Quality of life	3.2	1.4	12	58.33	0.577	0.167	11.00	<0.001

\*\* BT- before treatment, AT- after treatment, SD- standard deviation, SE- standard error

**Table 9: Effect of therapy on IPSS in Group-B (n=18)**

International Prostate Symptoms Score (IPSS)	Mean Score		n	%	SD (±)	SE (±)	t	P
	BT	AT	Relief					
Incomplete emptying	2.71	0.76	17	71.74	0.966	0.234	8.282	<0.001
Frequency	3.11	0.79	18	75.00	0.97	0.23	10.20	<0.001
Intermittency	1.85	0.34	13	79.17	0.967	0.268	5.447	<0.001
Urgency	2.21	0.43	14	80.65	0.80	0.21	8.33	<0.001
Weak stream	2.5	0.43	14	82.86	1.33	0.35	5.84	<0.001
Straining	1.54	0.23	13	85.00	1.032	0.286	4.57	<0.001
Nocturia	3.0	0.61	18	79.63	0.916	0.216	11.06	<0.001
Quality of life	3.39	1.56	18	54.10	0.618	0.146	1258	<0.001

\*\* BT- before treatment, AT- after treatment, SD- standard deviation, SE- standard error

**Table 10: Effect of therapy on objective parameters in Group-A: (n=12)**

Objective parameters	Mean Score		%	SD (±)	SE (±)	t	P
	BT	AT	Relief				
Prostate size & volume	1.75	1.17	33.34	0.515	0.149	3.924	0.002
Post-voidal residual urine volume	1.8	0.45	88.89	0.894	0.4	4.0	0.016
Average urine flow rate	1.2	0.3	75.00	0.568	0.18	5.014	<0.001

\*\* BT- before treatment, AT- after treatment, SD- standard deviation, SE- standard error

AUFR was improved up to 75%. This encouraging result was found because *Matra Basti* has the potency to pacify vitiated

*Apana Vata*, which is the prime factor for the manifestation of *Mutraghata*. The properties of *Bala Taila* such as muscle tone

**Table 11: Effect of therapy on objective parameters in Group-B (n=18)**

Objective parameters	Mean Score		% Relief	SD (±)	SE (±)	t	P
	BT	AT					
Prostate size & volume	2.8	2.35	16.67	0.717	0.174	2.704	0.016
Post - voidal residual urine volume	1.11	0.11	90.00	0.5	0.167	6.0	<0.001
Average urine flow rate	1.69	0.41	74.07	0.577	0.144	8.66	<0.001

\*\* BT- before treatment, AT- after treatment, SD- standard deviation, SE- standard error

**Table 12: Overall Effect of therapy in Group A: (n=12)**

Overall effect of therapy	Effect on IPSS		Effect on objective parameter		Overall effect of therapy	
	n	%	n	%	n	%
Complete remission	0	00.00	0	00.00	0	00.00
Maximum improvement	10	83.34	2	16.67	3	25.00
Moderate improvement	1	8.34	3	25.00	8	66.67
Mild improvement	1	8.34	7	58.34	1	8.34
Unchanged	0	00.00	0	00.00	0	00.00

**Table 13: Overall effect of therapy in Group B (n=18)**

Overall effect of therapy	Effect on IPSS		Effect on objective parameter		Overall effect of therapy	
	n	%	n	%	n	%
Complete remission	1	5.56	0	00.00	0	00.00
Maximum improvement	13	72.23	2	11.12	10	55.56
Moderate improvement	2	11.12	8	44.45	7	38.89
Mild improvement	2	11.12	5	27.78	1	5.56
Unchanged	0	00.00	3	16.67	0	00.00

**Table 14: Overall effect of therapy on different parameters (n=30)**

Overall effect of therapy	Effect on IPSS		Effect on objective parameter	
	n	%	n	%
Complete remission	1	3.34	0	0
Maximum Improvement	23	76.67	4	13.33
Moderate Improvement	3	10.00	11	36.67
Mild Improvement	3	10.00	12	40.00
Unchanged	0	00.00	3	10.00

building, rejuvenation and anti-inflammatory activities help to improve the function of the detrusor muscle. *Atibala* is an important ingredient of *Bala Taila* which contains saponin as a chemical component. It has diuretic and anti-inflammatory actions.<sup>[15]</sup> Hence, it is obvious that *Bala Taila* might have contributed in improvement of bladder function by increasing the bladder tone as well as reducing the size of the prostate. Ultimately the bladder outflow obstruction was improved and overall quality of life was improved with *Matra Basti*.

In group B, *Kanchanara Guggulu* and *Bala Taila Matra Basti* provided 71.74% relief in incomplete voiding, 75%

in increased frequency, 79.17% in intermittency, 80.65% in urgency, 82.86% in weak stream, 85.00% in straining and 79.63% in nocturia. The quality of life was improved up to 54.10%. These obtained results were statistically highly significant ( $P < 0.001$ ), whereas in objective findings, the size of the prostate was reduced up to 16.67%, PVRU was improved up to 90.00% and 74.07% increase was observed in AUFR.

The drug *Kanchanara Guggulu* having the properties of *Vata-Kapha Shamana, Pachana, Basti Shodhana* and *Mootrala* etc., might have helped to enhance the function of the bladder. The drug *Varuna (Crateva nurvala Buch.-Ham.)* is one of the ingredients of this formulation containing *Kampferol* and *quercetin flavonoids*. These chemical constituents act as inhibitor of estrogenic receptor.<sup>[13]</sup> Hence, *Kanchanara Guggulu* was helpful in reducing the size of the prostate. Ingredients of *Kanchanara Guggulu* like, *Triphala* and *Trikatu* contains ascorbic acid which helps to relax the smooth muscle of the prostate and bladder neck to relieve pressure and improve urine flow rate.<sup>[16]</sup>

On comparison to the effect of therapy as per the IPSS pattern, group A has shown better result as compared to group B (79.15%). There was no statistically significant difference ( $P = 0.296$ ) within two groups in the subjective parameters. It is suggested that changes that occurred with the treatment were not enough to exclude the possibility that the difference was due to chance. Hence, both groups had given parallel effect on symptoms/IPSS score of disease as per the statistical analysis.

According to all objective parameters such as prostate size, PVRU volume and average UFR, group A had shown better effect, that is, 65.74% relief as compared to group B (60.25%). But in both groups A- UFR was found increased statistically highly significant, whereas insignificant reduction ( $P > 0.05$ ) were observed in prostate size and PVRU as per statistics.

### Overall effect of therapy

During the entire period of therapy, there was no any untoward effect or adverse drug reaction observed in any of the patients of the group.

### Conclusion

This study concluded that 60 ml *Bala Taila Matra Basti* is effective and tolerable in the patients of *Mutrighata* (Benign Prostatic Hyperplasia). As the Benign Prostatic Hyperplasia is progressive degenerative disorder long term treatment may be needed to provide maximum relief in such patients.

### Acknowledgment

The authors would like to thank Director, IPGT and RA, GAU, Jamnagar.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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