INTRODUCTION

The non-cancerous enlargement of the prostate gland is known as benign prostatic hyperplasia (BPH). It refers to stromal and glandular epithelial hyperplasia that develops in the prostate’s periurethral transition zone, which encircles the urethra. Lower urinary tract symptoms (LUTSs) caused by irritative (urgency, frequency, and nocturia) and obstructive symptoms are a clinical manifestation of BPH (hesitancy, a weak and interrupted urinary stream, straining to initiate urination, a sensation of incomplete bladder emptying). Prolonged blockages may eventually result in renal insufficiency, hematuria, bladder calculi, acute urine retention, and recurrent urinary tract infection. As people get older, LUTS caused by BPH are more common. After the ages of 60 and 80, respectively, 40% and 80% of men experience moderate-to-severe symptoms. By the age of 90, microscopic BPH affects almost all males. It is also referred to as a quality-of-life disorder that makes it difficult for a man to start or stop the flow of urine (the symptoms interfere with daily activities) and lowers his sense of well-being. Although the exact origins of BPH are unknown, a number of factors, including ageing, late cell growth activation, genetics, and hormone changes,
have been linked to the enlargement of smooth muscle and glandular epithelial tissue.\(^4\)\(^5\)

It is unclear exactly how BPH and urologic malignancies are related. According to several research, hormones, inflammation, and metabolic syndrome may all be factors in BPH and prostate cancer.\(^6\) One explanation for the relationship between bladder cancer and BPH is that people with BPH may have reduced urinary tract damage because of the leftover urine in their bladders, and that BPH may lengthen that the amount of time their urothelium is exposed to urinary discharged carcinogens.\(^7\)

Prostate cancer, one of the most prevalent malignancies globally and the leading cause of cancer death for men in developed nations, has been the subject of numerous epidemiological studies that have examined the relationship between BPH and this disease.\(^8\) Similar studies examining the likelihood of bladder cancer in BPH patients also produced mixed results.\(^9\)\(^12\) The data linking BPH to an increased risk of urologic malignancies besides prostate and bladder cancer is weak and is rarely properly addressed. Investigation of their relationship is very important for both clinical and public health reasons, given the high frequency of both BPH and urologic malignancies. Understanding this connection would help doctors adopt common preventative measures for BPH and urologic malignancies, enhance the efficacy of cancer screening, and possibly cure cancer at an earlier stage.\(^13\)

As far as we know, our topic has not been the subject of a systematic review.

**Aims and objectives**

The aim of this study was to perform a survey of urologists over the management of BPH in India.

**MATERIALS AND METHODS**

A survey questionnaire was e-mailed to a random sample of 57 urologists of India through surveymonkey.com. Selected physicians received an e-mail which consisted of a cover letter describing the purpose of the survey, non-disclosure of identity clause, and the survey itself. The letter indicated that our department was conducting a study on practice patterns in the treatment of BPH in Indian scenario. Patient-related data from the urologists were collected and archived by surveymonkey.com. Of the 57 questionnaires sent, nine were returned, and 48 of those were included in the final analysis (response rate of 84.21%).

**Statistical analysis**

Statistical analysis was achieved using the SPSS statistical software, version 20.0. Independent samples Student's t-test and Pearson's correlation analysis for the assessment of mean differences between patients and control groups were performed with considered P<0.05 to be significant.

**RESULTS**

Maximum BPH patient visits to the study urologists per month were within the range of 1–25 (16 response), which is followed by 26–50 (14 response) and 51–75 (10 response). The least BPH patient visit to the study urologists per month is within the range of 76–100 (only 8 responses). Hence, an average of around 11.75 BPH patients per month can considered a general figure for BPH patient visit to the study urologists per month. Obstructive complaints (58.33%) were the most common reason for patient visits to urologist followed by increased urine frequency (35.41%). According to the study urologists, the most reliable investigation for diagnosis of BPH was USG-KUB+Uroflowmetry (79.17%) (Table 1).

Table 1: Distribution of BPH patient visits to the study urologists per month

| Range          | Number of Responses |
|----------------|---------------------|
| 1–25           | 16                  |
| 26–50          | 14                  |
| 51–75          | 10                  |
| 76–100         | 8                   |

According to the study urologists, the most preferred \(\alpha-1\) selective blocker drug in BPH patients of <60 years age and >60 years age was tamsulosin, whereas the most preferred \(\alpha-1\) selective blocker drug in cardiac patients having BPH was silodosin. Tamsulosin at 0.4 mg was rated as the preferred dose to prescribe adjoining \(\alpha-1\) selective blocker drugs in BPH patients. This was followed by silodosin 8 mg and alfuzosin 10 mg (Table 2).

Table 2: Distribution of \(\alpha-1\) selective blocker drug in BPH patients

| Drug          | Dose      | Number of Responses |
|---------------|-----------|---------------------|
| Tamsulosin    | 0.4 mg    | 21                  |
| Silodosin     | 8 mg      | 11                  |
| Alfuzosin     | 10 mg     | 5                   |

The most common adverse drug reaction (ADR) associated with the drug alfuzosin, tamsulosin, silodosin, and 5-alpha reductase inhibiting drugs was recorded as dizziness (39.58%), retrograde ejaculation (39.58%), retrograde ejaculation (50%), and loss of libido (43.75%), respectively. The most preferred 5-alpha reductase inhibiting drug and dose was dutasteride 0.5 mg/day (72.92%). According to the study urologists, the prostate size is >30 g and patients not having improvement using monotherapy were the major indication for putting them directly on fixed-dose combination (FDC) of alpha 1-selective blockers and 5-alpha reductase inhibitors. Monotherapy with alpha blocker and FDC therapy of alpha blocker and 5-ARI is the conservative treatment pattern preferred by study urologists to start in their patients having prostate size <30 and >30 g, respectively (Table 3).

Table 3: Distribution of FDC therapy in BPH patients

| Prostate Size | Number of Responses |
|---------------|---------------------|
| <30 g         | 54                  |
| >30 g         | 43                  |

Solifenacin is the preferred (54.16%) anti-cholinergic drug for urinary urgency and incontinence, whereas the preferred FDC for BPH patients and patients of BPH having irritable bladder symptoms is Dutasteride+Tamsulosin.
Table 1: Baseline information regarding the management of BPH

| Parameters                           | Questionnaire choices | Number of responses (n=48) | Percentage |
|--------------------------------------|-----------------------|----------------------------|------------|
| Number of patients suffering from BPH treated per month | 1–25                  | 16                         | 33.33      |
|                                      | 26–50                 | 14                         | 29.16      |
|                                      | 51–75                 | 10                         | 20.83      |
|                                      | 76–100                | 8                          | 16.66      |
| The most common reason for which patient come to you for treatment | Obstructive complaints | 28                         | 58.33      |
|                                      | Increased urine frequency | 17                       | 35.41      |
|                                      | Lower abdominal discomfort | 1                       | 2.08       |
|                                      | Urinary tract infection | 2                          | 4.16       |
| The most reliable investigation for diagnosis of BPH | PSA                  | 2                          | 4.16       |
|                                      | USG-KUB               | 6                          | 12.5       |
|                                      | Uroflowmetry          | 2                          | 4.17       |
|                                      | USG-KUB+Uroflowmetry  | 38                         | 79.17      |

Table 2: Preference of study urologists toward drug management of BPH

| Parameters                           | Questionnaire choices | Number of responses (n=48) | Percentage |
|--------------------------------------|-----------------------|----------------------------|------------|
| The most preferred α-1 selective blocker drug in BPH patients of <60 years age | Doxazosin            | 0                          | 0          |
|                                      | Alfuzosin             | 19                         | 39.58      |
|                                      | Tamsulosin            | 25                         | 52.08      |
|                                      | Silodosin             | 4                          | 8.33       |
| The most preferred α-1 selective blocker drug in BPH patients of >60 years age | Doxazosin            | 0                          | 0          |
|                                      | Alfuzosin             | 7                          | 14.58      |
|                                      | Tamsulosin            | 22                         | 45.83      |
|                                      | Silodosin             | 19                         | 39.58      |
| The most preferred α-1 selective blocker drug in cardiac patients having BPH | Doxazosin            | 4                          | 8.33       |
|                                      | Alfuzosin             | 6                          | 12.5       |
|                                      | Tamsulosin            | 14                         | 29.16      |
|                                      | Silodosin             | 24                         | 50         |

Preferred dose to prescribe adjoining α-1 selective blocker drugs in BPH patients (drug dose in mg) (n=48)

| Parameters                           | Questionnaire choices | Number of responses (n=48) | Percentage |
|--------------------------------------|-----------------------|----------------------------|------------|
| Doxazosin 1 mg                       | 0                     | 0                          | 0          |
| Doxazosin 2 mg                       | 0                     | 0                          | 0          |
| Doxazosin 4 mg                       | 3                     | 6.25                       | 0          |
| Doxazosin – not prescribed           | 9                     | 18.75                      | 0          |
| Alfuzosin 5 mg                       | 3                     | 6.25                       | 0          |
| Alfuzosin 10 mg                      | 21                    | 43.75                      | 0          |
| Tamsulosin 0.2 mg                    | 2                     | 4.17                       | 0          |
| Tamsulosin 0.4 mg                    | 41                    | 85.42                      | 0          |
| Tamsulosin 0.8 mg                    | 1                     | 2.08                       | 0          |
| Silodosin 4 mg                       | 7                     | 14.58                      | 0          |
| Silodosin 8 mg                       | 28                    | 58.33                      | 0          |

BPH: Benign prostatic hyperplasia, PSA: Prostate-specific antigen

(56.25%) and Solifenacin+Tamsulosin (62.5%), respectively (Table 4).

Tadalafil was the preferred PDE inhibitor for patients experiencing erectile dysfunction. The maximum entries (54.16%) were recorded for 1–6 weeks for patient’s treatment with alpha blockers/5-alpha reductase inhibitors, the IPSS score of the patient improves usually. Alpha blockers gave the fastest symptomatic improvement in BPH patients. Study urologists believed that around 1–25% of their patients were non-compliant with the medical treatment due to financial issues. Study urologists recorded that in around 1–25% of their patients, surgery is required because of failure of conservative treatment. Several study urologists believe that the estimated cost of drug/drugs for BPH given per day was 10–25 INR. Study urologists suggested that the duration of medical management before you advise them surgery was less than 6 months. Finally, according to the opinion of the study urologists, the drug therapy plus surgery was the most cost-effective strategy for BPH patients (Table 5).

**DISCUSSION**

The biological basis for androgen ablation therapy is the discovery that androgen dihydrotestosterone is necessary for the prostate’s embryonic development (DHT). In addition, prostatic hypertrophy regressed among individuals who had been castrated before to reaching puberty. The prostatic volume decrease brought on by androgen deprivation is thought to lessen the static component.
By suppressing the release of luteinizing hormone, progestational drugs (hydroxyprogesterone acetate and megestrol) can lower serum testosterone levels, resulting in reversible androgen deprivation.16,17
A well-established method for treating BPH involves blocking gonadotropin release from the anterior pituitary gland using agonistic gonadotropin-releasing hormone (GnRH) analogs (nafarelin acetate and leuprolide), which desensitizes and downregulates the pituitary GnRH receptor.\(^{18,20}\) In addition, antiandrogens such as cyproterone acetate and flutamide, which are used therapeutically for BPH, competitively reduce the ligand DHT binding to the androgen receptor.\(^{21,22}\) Multiple lines of evidence point to the involvement of estrogen and androgen in BPH. Men primarily create estrogens through the peripheral conversion of testicular and adrenal androgen into estradiol through aromatase activity. The estrogenic effect probably comprises its stromal and epithelial interaction, which controls the prostate’s proliferative activity and changes the prostate’s sensitivity to androgens.\(^{23}\) The pharmaceutical therapy of BPH uses aromatase inhibitors such as atorvastatin and abiraterone that prevent the peripheral conversion.\(^{24,25}\) Although androgen deprivation therapy has been shown to be an effective treatment, its usage has been constrained due to its potential side effects, including erectile dysfunction and libido loss.\(^{26,27}\)

BPH has a complex and poorly understood molecular etiology.\(^{28}\) There have been some recognized potential risk factors for BPH development. Age, genetics, hormones, growth factors, inflammation, and lifestyle factors are some of these.\(^{29}\) BPH is initially diagnosed with a digital rectal exam, urine test, blood test, and a blood test for prostate-specific antigen. Urologists may advise transrectal ultrasonography, prostate biopsy, urodynamic and pressure flow investigations, or cystoscopy in cases of difficult

### Table 5: Patient and BPH management profile

| Parameters                                      | Questionnaire choices | Number of responses (n=48) | Percentage |
|------------------------------------------------|-----------------------|----------------------------|------------|
| In your patients, if erectile dysfunction occurs, which PDE inhibitor do you prefer to prescribe? | Sildenafil            | 15                         | 31.25      |
| In your patients, after how many weeks of treatment with the above drugs (alpha blockers/5-alpha reductase inhibitors) the IPSS score of the patient improves usually? | 1–6 weeks             | 26                         | 54.16      |
|                                                    | 7–12 weeks            | 17                         | 35.42      |
|                                                    | 13–24 weeks           | 3                          | 6.25       |
|                                                    | >24 weeks             | 2                          | 4.16       |
| As per your opinion the drug therapy giving fastest symptomatic improvement in BPH patients is? | Alpha blockers        | 28                         | 58.33      |
|                                                    | 5-ARI                 | 0                          | 0          |
|                                                    | Combination of 5-ARI and alpha blocker | 20              | 41.66      |
| How many of your patients were non-compliant with the medical treatment? | 1–25%                | 30                         | 62.5       |
|                                                    | 26–50%                | 15                         | 31.25      |
|                                                    | 51–75%                | 3                          | 6.25       |
|                                                    | >75%                  | 0                          | 0          |
| In your patients, what is the most common reason for non-compliance to medical treatment? | Adverse drug reactions | 8                          | 16.66      |
|                                                    | Drug interactions     | 0                          | 0          |
| In what percentage of your patients, surgery is required because of failure of conservative treatment? | 1–25%                | 26                         | 54.16      |
|                                                    | 26–50%                | 20                         | 41.66      |
|                                                    | 51–75%                | 2                          | 4.16       |
|                                                    | 76–100%               | 0                          | 0          |
| In your patients, what is the estimated cost of drug/drugs for BPH given per day? | <10 INR               | 8                          | 16.66      |
|                                                    | 10–25 INR             | 20                         | 41.66      |
|                                                    | 25–50 INR             | 16                         | 33.33      |
|                                                    | 50–100 INR            | 4                          | 8.33       |
| In your patients, what is the duration of medical management before you advise them surgery? | <6 months             | 21                         | 43.75      |
|                                                    | 6–12 months           | 20                         | 41.66      |
|                                                    | 12–18 months          | 2                          | 4.16       |
|                                                    | >18 months            | 5                          | 10.41      |
| In your opinion what is the most cost-effective strategy for BPH patients? | Drug therapy alone    | 7                          | 14.58      |
|                                                    | Drug therapy plus minimal invasive procedure | 10              | 20.83      |
|                                                    | Surgery alone         | 11                         | 22.92      |
|                                                    | Drug therapy plus surgery | 20              | 41.67      |

BPH: Benign prostatic hyperplasia
conditions and the use of alpha blockers, 5-alpha reductase inhibitors, and combination medication therapy in the treatment of BPH.30

In this survey, the most common reason for which patient came to the urologist was for the treatment of obstructive complaints. Majority of urologist’s opinion that USG-KUB with uroflowmetry is the most reliable investigation for diagnosis of BPH. Tamsulosin (tamsulosin 0.4 mg) was the most preferred α-1 selective blocker drug in BPH patients across all the age groups, whereas silodosin was the most preferred α-1 selective blocker drug in cardiac patients having BPH. These observations are in consistent with the survey of Ku et al., among the Korean urologists.31

Recently, Gustafsson et al.,32 also reported that dizziness was the most common ADR associated with the drug alfuzosin, which is in line with the result obtained from our survey. According to the observations of our survey, Imperatore et al.,33 found that retrograde ejaculation was the most common ADR associated with the drug tamsulosin and silodosin. Loss of libido was the most common recorded ADR in patients receiving 5-alpha reductase inhibiting drugs. Whereas Hay-Smith et al.,34 have also suggested that solifenacin is the preferred anticholinergic drug for urinary urgency and incontinence.

According to Emberton et al.,35 surgical intervention is generally considered to be the endpoint for BPH. In the present survey, study urologists recorded that in around 1–25% of their patients, surgery is required because of failure of conservative treatment. Several study urologists believe that the estimated cost of drug/drugs for BPH given per day was 10–25 INR. Study urologists suggested that the duration of medical management before you advise them surgery was <6 months. The findings are consistent with a prospective, cross-sectional survey carried out by Fitzpatrick et al.,36 in public and private urology offices in France, Asia, Latin America, Algeria, and the Middle East.

Numerous guidelines exist in the therapeutic fields, which causes a great deal of variation in the suggestions they offer. In addition, some standards do not adequately address the problem of BPH therapy.37,39 Additional detail is required in this clinical field, and future versions of BPH management guidance should aim to resolve this problem more effectively.

**Limitations of the study**

There are some possible drawbacks to our analysis that should be taken into consideration. First, our results need to be carefully viewed because our data on the practice habits of urologists are focused on self-reported actions, not real behavior as assessed by audit. Second, the response to the survey was just around 84.21%. Non-response would inevitably lead to some random sampling error rising beyond what would be predicted if most of the questionnaires were returned.

**CONCLUSION**

Our data provide a description of current practice by urologists in India concerning the management of BPH. There is no uniformity in the treatment of acute urinary retention; however, the overall care must be individualized for the patient. Lack of understanding of the population’s history of BPH hinders advancement in appropriate care. Further details on BPH care can continue to advance the feasibility of BPH therapy.

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**REFERENCES**

1. Miller J and Tarter TH. Combination therapy with dutasteride and tamsulosin for the treatment of symptomatic enlarged prostate. Clin Interv Aging. 2009;4:251-258. https://doi.org/10.2147/cia.s4102

2. Nickel JC. BPH: Costs and treatment outcomes. Am J Manag Care. 2006;12(Suppl 5):S141-148.

3. Berry SJ, Coffey DS, Walsh PC and Ewing LL. The development of human benign prostatic hyperplasia with age. J Urol. 1984;132(3):474-479. https://doi.org/10.1016/s0022-5347(17)49698-4

4. Culig Z, Hobisch A, Cronauer MV, Radmayr C, Hittmair A, Zhang J, et al. Regulation of prostatic growth and function by peptide growth factors. Prostate. 1996;28(6):392-405. https://doi.org/10.1002/(SICI)1097-0045(199606)28:6<392::AID-PROS9>3.0.CO;2-C

5. Jenkins EP, Andersson S, Imperato-McGinley J, Wilson JD and Russell DW. Genetic and pharmacological evidence for more than one human steroid 5 alpha-reductase. J Clin Invest. 1992;89(1):293-300. https://doi.org/10.1172/JCI115574

6. Alcaraz A, Hammerer P, Tubaro A, Schröder FH and Castro R. Is there evidence of a relationship between benign prostatic hyperplasia and prostate cancer? Findings of a literature review. Eur Urol. 2009;55(4):864-873. https://doi.org/10.1016/j.eururo.2008.11.011

7. Kadiubic FF, Dooley KL, Teitel CH, Roberts DW, Benson RW, Butler MA, et al. Frequency of urination and its effects on metabolism, pharmacokinetics, blood hemoglobin adduct formation, and liver and urinary bladder DNA adduct levels in beagle dogs given the carcinogen 4-aminobiphenyl. Cancer Res. 1991;51(16):4371-4377.

8. Siegel R, Naishadham D and Jemal A. Cancer statistics, 2012.
9. Tseng CH. Benign prostatic hyperplasia is a significant risk factor for bladder cancer in diabetic patients: A population-based cohort study using the national health insurance in Taiwan. BMC Cancer. 2013;13:7. https://doi.org/10.1186/1471-2407-13-7

10. Mommassen S, Aagaard J and Sell A. An epidemiological case-control study of bladder cancer in males from a predominantly rural district. Eur J Cancer Clin Oncol. 1982;18(11):1205-1210. https://doi.org/10.1016/0722-5379(82)90103-1

11. Greenwald P, Kirmss V, Polan AK and Dick VS. Cancer of the prostate among men with benign prostatic hyperplasia. J Natl Cancer Inst. 1974;53(2):335-340. https://doi.org/10.1093/jnci/53.2.335

12. Kang D, Chokalingam AP, Gridley G, Nyren O, Johansson JE, Adami HO, et al. Benign prostatic hyperplasia and subsequent risk of bladder cancer. Br J Cancer. 2007;96(9):1475-1479. https://doi.org/10.1038/sj.bjc.6603730

13. Ørsted DD and Bojesen SE. The link between benign prostatic hyperplasia and prostate cancer. Nat Rev Urol. 2013;10(1):49-54. https://doi.org/10.1038/nrurol.2012.192

14. Blohm TR, Laughlin ME, Benson HD, Johnston JO, Wright CL, Schatzman GL, et al. Pharmacological induction of 5 alpha-reductase deficiency in the rat. Separation of testosterone-mediated and 5 alpha-dihydrotestosterone-mediated effects. Endocrinology. 1986;119(3):959-966. https://doi.org/10.1210/endo-119-3-959

15. Reid P, Kantoff P and Oh W. Antiandrogens in prostate cancer. Chem Res Toxicol. 2003;16(12):1652-1660. https://doi.org/10.1021/tx034168k

16. Jønler M, Riehmann M and Bruskewitz RC. Benign prostatic hyperplasia. N Engl J Med. 1987;317(10):599-604. https://doi.org/10.1023/a:1006344807086

17. Reid P, Kantoff P and Oh W. Antiandrogens in prostate cancer. Chem Res Toxicol. 2003;16(12):1652-1660. https://doi.org/10.1021/tx034168k

18. Peters CA and Walsh PC. The effect of nafarelin acetate, a luteinizing-hormone-releasing hormone agonist, on benign prostatic hyperplasia with progestational agents: A preliminary report. Drugs. 1994;47(1):66-81. https://doi.org/10.2165/00003495-199447010-00005

19. Mearini L and Porena M. Transrectal high-intensity focused ultrasound for the treatment of prostate cancer: Past, present, and future. Indian J Urol. 2010;26(1):4-11. https://doi.org/10.4103/0970-1591.60436

20. Griesinger G, Felberbaum R and Diedrich K. GnRH-antagonists in reproductive medicine. Arch Gynecol Obstet. 2005;273(2):71-78. https://doi.org/10.1007/s00404-005-0021-2

21. Scott WW and Wade JC. Medical treatment of benign nodular prostatic hyperplasia with cyproterone acetate. J Urol. 1969;101(1):81-85. https://doi.org/10.1016/s0022-5379(17)62279-1

22. Ai N, DeLisle RK, Yu SJ and Welsh WJ. Computational models for predicting the binding affinities of ligands for the wild-type androgen receptor and a mutated variant associated with human prostate cancer. Chem Res Toxicol. 2003;16(12):1652-1660. https://doi.org/10.1021/tx034168k

23. Ito K, Fukabori Y, Shibata Y, Suzuki K, Mieda M, Gotanda K, et al. Effects of a new steroidal aromatase inhibitor, TZA-2237, and/or chlormadinone acetate on hormone-induced and spontaneous canine benign prostatic hyperplasia. Eur J Endocrinol. 2000;143(4):543-554. https://doi.org/10.1530/eje.0.1430543

24. Henderson D, Habenicht UF, Nishino Y, Kerb U and El Etreby MF. Aromatase inhibitors and benign prostatic hyperplasia. J Steroid Biochem. 1986;25(5B):867-876. https://doi.org/10.1016/0022-4731(86)90318-3

25. Handratta VD, Vaszits TS, Njor VC, Gediyu LK, Kataria R, Chopra P, et al. Novel C-17-heteroaryl steroid CYP17 inhibitors/antiandrogens: Synthesis, in vitro biological activity, pharmacokinetics, and antitumor activity in the LAPC4 human prostate cancer xenograft model. J Med Chem. 2005;48(8):2972-2984. https://doi.org/10.1021/jm040202w

26. Guess HA, Heyse JF and Gormley GJ. The effect of finasteride on prostate-specific antigen in men with benign prostatic hyperplasia. Prostate. 1993;22(1):31-37. https://doi.org/10.1002/pros.299020105

27. Isaacs JT. 5Alpha-reductase inhibitors and the treatment of benign prostatic hyperplasia. Drugs Today. 1993;29(5):335-342.

28. Cabelin MA, Te AE and Kaplan SA. Benign prostatic hyperplasia: Challenges for the new millennium. Curr Opin Urol. 2000;10(4):301-306. https://doi.org/10.1097/00002430-200007000-00003

29. Calogero AE, Burgio G, Condorelli RA, Cannarella R and La Vignera S. Epidemiology and risk factors of lower urinary tract symptoms/benign prostatic hyperplasia and erectile dysfunction. Aging Male. 2019;22(1):12-19. https://doi.org/10.1080/13685538.2018.1434772

30. Lokeshwar SD, Harper BT, Webb E, Jordan A, Dykes TA, Neal DE Jr., et al. Epidemiology and treatment modalities for the management of benign prostatic hyperplasia. Transl Androl Urol. 2019;8(5):529-539. https://doi.org/10.21037/tau.2019.10.01

31. Ku JH, Kim SW and Paick JS. Questionnaire survey of urologists’ initial treatment practices for acute urinary retention secondary to benign prostatic hyperplasia in Korea. Urol Int. 2006;76(4):314-320. https://doi.org/10.1159/000092054

32. Gustafsson M, Sjölander M, Pfister B, Jonsson J, Schneede J and Lövheim H. Drug-related hospital admissions among old people with dementia. Eur J Clin Pharmacol. 2016;72(9):1143-1153. https://doi.org/10.1007/s00228-016-2084-3

33. Imperatore V, Fusco F, Creta M, Di Meo S, Buonopane R, Longo N, et al. Medical expulsive therapy for distal ureteric stones: Tamsulosin versus silodosin. Arch Ital Urol Androl. 2014;86(2):103-107. https://doi.org/10.4081/aiua.2014.2.103

34. Hay-Smith J, Herbison P, Ellis G and Morris A. Which anticholinergic drug for overactive bladder symptoms in adults. Cochrane Database Syst Rev. 2005;(3):CD005429. https://doi.org/10.1002/14651858.CD005429

35. Emberton M, Andriole GL, de la Rosette J, Djavan B, Hoefner K, Emberton M, et al. Effects of a new steroidal aromatase inhibitor, TZA-2237, and/or chlormadinone acetate on hormone-induced and spontaneous canine benign prostatic hyperplasia. Eur J Endocrinol. 2000;143(4):543-554. https://doi.org/10.1530/eje.0.1430543

36. Fitzpatrick JM, Desgrandchamps F, Adjali K, Gomez Guerra L, Hong SJ, El Khalil S, et al. Management of acute urinary retention: A worldwide survey of 6074 men with benign prostatic
Pandey, et al.: Survey of the management of benign prostatic hyperplasia. BJU Int. 2012;109(1):88-95. 
https://doi.org/10.1111/j.1464-410X.2011.10430.x

37. De la Rosette JJ, Alivizatos G, Madersbacher S, Perachino M, Thomas D, Desgrandchamps F, et al. EAU guidelines on benign prostatic hyperplasia (BPH). Eur Urol. 2001;40(3):256-263; discussion 264. 
https://doi.org/10.1159/000049784

38. Nickel JC, Méndez-Probst CE, Whelan TF, Paterson RF and Razvi H. 2010 Update: Guidelines for the management of benign prostatic hyperplasia. Can Urol Assoc J. 2010;4(5):310-316. 
https://doi.org/10.5489/cuaj.10124

39. Roehrborn CG, Bartsch G, Kirby R, Andriele G, Boyle P, de la Rosette J, et al. Guidelines for the diagnosis and treatment of benign prostatic hyperplasia: A comparative, international overview. Urology. 2001;58(5):642-650. 
https://doi.org/10.1016/s0090-4295(01)01402-9

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