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Original Article

Biochemistry Section

To Assess the Quality of Life in Patients with Benign Prostate Hyperplasia (BPH) Based on Urinary Symptoms

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ABSTRACT

Introduction: Benign Prostatic Hyperplasia (BPH) is a common condition in older men that can often result in Lower Urinary Tract Symptoms (LUTS). BPH is a disease in which the prostate gland enlarges beyond the normal volume of 20-30 mL as part of the ageing process. The severity of LUTS can be estimated by the International Prostate Symptoms Score (IPSS). LUTS associated with BPH can have a significant negative impact on the Quality of Life (QoL) of patients.

Aim: To assess the severity of symptoms and the QoL of patients with BPH based on IPSS Score and QoL Score.

Materials and Methods: The present study is a qualitative study conducted over a period of one month. Hundred patients constituted the study group and 50 age-matched males constituted the control group. The patients were interviewed using close-ended questions as described in the pre-tested and validated questionnaire based on IPSS scoring system.

Results: In the study group, 20 patients of age group 41-50 years, 20 patients of age group 51-60 years, 20 patients of age group 61-70 years, 20 patients of age group 71-80 years and 20 patients of age group 81-90 years. Symptoms with which the patients presented were frequency, nocturia, urgency, straining, weak stream, intermittency and incomplete emptying. Out of which nocturia and incomplete emptying were the predominant symptoms. It was found that the maximum symptoms were observed in the age group more than 50 years. It was observed that with the increase in the age, the severity of the symptoms increased and was statistically significant (p=<0.001). The QoL score of the patients with BPH is maximum in the age group 81-90 years. Maximum patients were dissatisfied with their conditions.

Conclusion: In the present study it was concluded that according to the IPSS Score the main LUTS affecting QoL were nocturia and incomplete emptying of urinary bladder. Maximum severity of symptoms (IPSS Score of more than 18) was observed in patients more than 80 years of age. LUTS associated with BPH have a significant negative impact on the (QoL) of patients. The IPSS Symptom Score and QoL questionnaires help the clinicians to better understand patient's symptoms and their impact and can aid in assessing the results of treatment. Validated Questionnaires can be extremely useful in clinical practice as well as research.

Keywords: International prostatic symptom score, Lower urinary tract symptoms, Questionnaire

INTRODUCTION

BPH is characterised by the non-malignant overgrowth of prostatic tissue surrounding the urethra, ultimately constricting the urethral opening and giving rise to associated LUTS [1].

The present study was carried out to assess the QoL of patients with BPH on IPSS Score and QoL. BPH can be defined as documentable gross or histologic growth of prostate glandular tissues, stromal tissues, or both. Usually, beginning around the age of 40 years, the prevalence of BPH rises to more than 50% at 50 years of age to as much as 90% at the age of 85 years. As life expectancy increases, BPH will be a significant cause of morbidity. About 50% of men with histologically proven BPH have moderate to severe LUTS that are symptoms related to storage and voiding of urine [2].

LUTS are categorised into three groups voiding symptoms, storage symptoms and post micturition symptoms which become common with age, impacting health related QoL. To elaborate, voiding symptoms includes slow stream, splitting/spraying, intermittency, hesitancy, straining and terminal dribble, storage symptoms includes increased daytime frequency, nocturia, urgency and urinary incontinence and post-micturition symptoms including feeling of incomplete emptying and post-micturition dribble [3,4].

The I-PSS is vital tool for clinical management of patients with LUTS and also as mentioned in verious research studies regarding the medical and surgical treatment of patients with voiding dysfunction. This system as explained contains several questions, based on which LUTS is classified as mild, moderate and severe with score of 0-7, 8-19 and 20 to 35, respectively [5].

In the clinical practice, the guidelines for the diagnosis and treatment of BPH have been issued by the Agency For Health Care Policy And Research (AHCPR) [6], it was recommended that symptoms of BPH be taken into account in making treatment recommendations based on a standard symptom questionnaire known as IPSS and QoL Score [5].

The IPSS is a scoring system used to screen for and diagnose BPH as well as to monitor symptoms and guide decisions about how to manage the disease [7]. It is based on several questions, of which one pertain to quality of life and rest seven pertain to disease symptoms. Further, the answers are scored on scale of 1 to 6 for QoL and 1 to 5 for disease symptoms [8].

One of the most significant contributions of IPSS is to efficiently monitor treatment efficacy. According to the total IPSS Score, the severity of LUTS is usually graded as mild (0-7), moderate (8-19) and severe (20-35). According to these guidelines, patients with mild symptoms do not require treatment or further investigation [8]. IPSS is currently the standard questionnaire for the objective assessment of LUTS throughout the world. The study has been reported by Kamil C, Lowe Franklin C, Nagarathnam M and Latheef S [9-11]. Indications of BPH surgery includes refractory symptoms to medical condition/state which implies the importance of scores accuracy.

Certain limitations have been analysed in the above stated studies. The present study was carried out to assess the QoL of patients with BPH on IPSS Score and QoL. The different

parameters were analysed age wise and the prevalence of the parameters assessed in this study lacks in the studies mentioned above.

MATERIALS AND METHODS

The present cross-sectional study was conducted at Rajindra Hospital, Patiala in Department of Biochemistry in the month of March 2019. Hundred patients of different age groups from 41 to 90 years constituted the study group and 50 age matched males constituted the control group. The patients were interviewed using close-ended questions as described in the pretested and validated questionnaire based on IPSS scoring system. Ethics approval was obtained for the study.

Inclusion Criteria

Male patients >40 years of age with BPH and presenting with LUTS and those who had filled their consent form for the study.

Exclusion Criteria

Patients with UTI, Prostatitis, Stricture urethra, Prostate cancer and those who did not give consent.

STATISTICAL ANALYSIS

The data was analysed using Microsoft Excel Software 2017; SPSS 19.0 version. Chi-Square tests, Mann- Whitney tests and t-test were done to analyse the data.

RESULTS

Patients with BPH presented symptoms such as frequency, nocturia, urgency, straining, weak stream, intermittency, and incomplete emptying. Out of these, nocturia and incomplete emptying were the predominant symptoms [Table/Fig-1].

There were 20 patients of age groups 41-50 years, 20 patients of age group 51-60 years, 20 patients of age group 61-70 years, 20 patients of age group 71-80 years and 20 patients of age group 81-90 years. It was found that the maximum symptoms were observed in the age group more than 50 years [Table/Fig-2].

The maximum mean value of IPSS Score was 23.3±5.43 in the age group 81-90 years. It was observed that with the increase in age the severity of symptoms increased and was statistically significant. Hence most severe symptoms were observed in patients >80 years of age [Table/Fig-3].

Symptom	Not at all	<1 Time in 5	Less than the time	About half the time	More than half the time	Almost always	Your score
Incomplete emptying Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5	
Frequency Over the past month, how often have you had to urinate again <2 hours after you finished urinating?	0	1	2	3	4	5	
Intermittency Over the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
Urgency Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
Weak stream Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
Straining Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	
	None	1 times	2 times	3 times	4 times	≥5 times	
Nocturia Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	0	1	2	3	4	5	
Total IPPS score							
QoL due to urinary symptoms	Delighted	Pleased	Mostly satisfied	Mixed about equally satisfied and dissatisfied	Mostly dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

[Table/Fig-1]: Score and QoL Score [5].
IPSS: International prostate symptoms score; QoL: Quality of life

	Symptoms								
Age (in years)	Incomplete emptying	Intermittency	Weak stream	Straining	Frequency	Urgency	Nocturia	Mean±SD	p-value
41-50	4	5	1	1	4	1	4	2.8±1.6	
51-60	4	2	2	4	3	1	4	2.8±1.1	
61-70	4	1	1	3	5	2	4	2.8±1.4	<0.0001
71-80	4	1`	4	4	3	1	3	2.8±1.2	
81-90	4	2	2	2	2	3	5	2.8±1.1	
	20	11	10	14	17	8	20		

[Table/Fig-2]: Relationship of age with symptoms.
SD: Standard deviation

	IPSS score				
Age (in years)	Mild (0-7)	Moderate (8-18)	Severe (>18)	Mean±SD	p-value
41-50	6	11	5	14.4±7.60	
51-60	4	9	7	16.0±5.82	
61-70	2	10	12	19.5±8.15	<0.001
71-80	3	2	13	20.8±8.84	
81-90	0	5	11	23.3±5.43	
Total	15	37	48		

[Table/Fig-3]: Relationship between age and Ipss score.
IPSS: International prostate symptoms score; SD: Standard deviation

The maximum mean value of QoL Score of patients with BPH was 2.8±4.7 in the age group 81-90 years. And it was observed that maximum patients were dissatisfied with their conditions [Table/Fig-4].

4. Economically: In lower middle class and lower class patients.
5. IPSS score and QoL score in patients with BPH of various ages were compared and shown in [Table/Fig-6]. The results were statistically significant, with p-value <0.001.

Age (in years)	Mean±SD (IPSS score)	Mean±SD (QoL)	p-value
41-50	14.4±7.60	2.8±3.3	
51-60	16.0±5.82	2.8±3.9	
61-70	19.5±8.15	2.8±4.0	<0.001 Highly significant
71-80	20.8±8.84	2.8±4.1	
81-90	23.3±5.43	2.8±4.7	

[Table/Fig-6]: Comparison of IPSS score and QoL score in patients with BPH of various age.
IPSS: International prostate symptoms score; QoL: Quality of life; SD: Standard deviation

	QoL Score								
Age (in years)	0 Delighted	1 Pleased	2 Mostly satisfied	3 Mixed about equally satisfied and dissatisfied	4 Mostly dissatisfied	5 Unhappy	6 Terrible	Mean±SD	p-value
41-50	0	0	6	4	9	1	0	2.8±3.3	
51-60	0	0	3	6	11	0	0	2.8±3.9	
61-70	0	0	3	4	12	1	0	2.8±4.0	<0.001
71-80	0	0	5	3	12	0	0	2.8±4.1	
81-90	0	0	3	3	14	0	0	2.8±4.7	
Total	0	0	20	20	58	2	0		

[Table/Fig-4]: Relationship between age and QoL score.
QoL: Quality of life; SD: Standard deviation

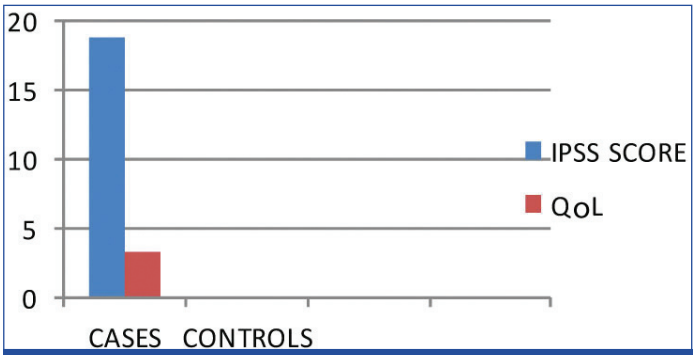
According to socio-demographic analysis the maximum severity of symptoms was observed as follows [Table/Fig-4]:

1. Area wise: In rural areas
2. Education Scale: Among the patients who had primary schooling, diploma holders and graduates.
3. Occupation: In unemployed patients [Table/Fig-5]

Category	IPSS			Mean±SD	p-value
	Mild	Moderate	Severe		
1. Area (n=150)					
Rural (n=96)	14	30	52	32.0±19.0	<0.001
Urban (n=54)	09	22	23	18.0±7.8	
2.Education (n=150)					
Illiterate (n=42)	10	25	07	14.0±9.6	<0.001
Literate (n=108)					
Primary school (n=10)	02	02	06	3.3±2.3	
Middle school (n=28)	09	10	09	9.3±1.5	
High school (n=15)	02	09	04	5.0±3.6	
Diploma (n=18)	02	05	11	06±4.5	<0.001
Graduation (n=16)	03	04	09	5.3±3.2	
Post graduation (n=12)	08	02	02	4.0±3.4	
Profession or Honors (n=09)	05	03	01	3.0±1.6	
3.Occupation (n=150)					
Unemployed (n=50)	05	11	34	16.6±15.3	
Semi skilled (n=42)	05	22	15	14.0±8.5	<0.001
Skilled (n=58)	03	23	32	19.3±14.8	
4.Monthly income (n=150)					
Upper class (n=34)	11	14	09	11.3±2.0	
Upper middle class (n=35)	12	14	09	11.6±2.0	<0.001
Lower middle class (n=46)	17	10	19	15.3±3.8	
Lower class (n=35)	10	08	17	11.6±3.8	

[Table/Fig-5]: IPSS score according to socio-demographic analysis.
IPSS: International prostate symptoms score; SD: Standard deviation

In the above chart it was observed that the healthy controls were not suffering from any of the symptoms and had a delighted QoL as compared to the patients who were suffering from various symptoms like incomplete emptying [Table/Fig-7].



[Table/Fig-7]: Correlation between the cases and controls on the bases of IPSS score and QoL.
IPSS: International prostate symptoms score; QoL: Quality of life

DISCUSSION

BPH is one of the most common diseases of the ageing men. It is associated with LUTS that affect individual QoL and cause significant economic burden to the society [9]. BPH causes Bladder Outlet Obstruction (BOO) among affected men and the several symptoms of BPH, which include LUTS which can adversely affect QoL [10,11].

In the present study, it was observed that with the increase in age, the severity of symptoms increased and was maximum in 81-90 years of age. This is explained probably by a progressive decrease in serum testosterone levels in males with advancing age. Also the increased severity of symptoms with increasing age may be associated with a history of prostatitis, recurrent urinary tract infections, catheterisations or any surgical interventions causing uretheral strictures. The present study was similar to the studies conducted by Girman CJ et al., Lee E et al., Trueman P et al., Tsukamoto T et al., also found the age was positively correlated to the increase in the severity of the symptoms [Table/Fig-2] [12-15].

BPH can be associated with a number of health-related problems relevant to older men, including increased risk of acute urinary retention, sexual dysfunction, and BPH-related surgery [16,17]. Patients with LUTS experiencing nocturia adversely affects their quality of life in negative manner. Nocturia further act as a higher risk factor of mortality as it is partly associated with injuries and complications resulting from falls at night. Further in day time nocturia may lead to sleepiness which may led to increased risk of accidents while driving and in the workplace [18,19].

LUTS associated with BPH is accompanied by factors as erectile dysfunction or ejaculation related problems. The subjects state that these bladder related incidents limit their freedom and certain bathroom visits with intermittent catheters made them anxious [20]. The severity of LUTS was associated with socio-demographic characteristics. According to socio-demographic analysis, the maximum severity of symptoms was observed as follows [Table/Fig-5]. This study was similar to the study conducted by Jo JK et al., [8]. Incomplete empting of the bladder and nocturia were the most frequent symptoms observed in the present study. Among the patients suffering from Nocturia and the patients complaining of incomplete emptying of their urinary bladder generally were dissatisfied with their urinary conditions. The present study was similar to that of the study conducted by Mark S et al., [18]. The maximum numbers of patients were dissatisfied and unhappy with their QoL [Table/Fig-4]. LUTS associated with BPH have a significant negative impact on patient's QoL.

In addition to the economic burden of the condition, LUTS secondary to BPH can have a major impact on men and their families, as QoL is greatly impacted, to a greater extent with more severe symptoms, and gets worse over time [18].

Nocturia is the main symptom affected in the age group 81-90 years. This high dependence on age may be caused by several factors. As a result of age-associated problems like renal-concentrating ability, low sodium-absorbing ability, irregular or loss of circadian rhythm of ADH secretion, diminished secretion of renin angiotensin-aldosterone, increased secretion of atrial natriuretic hormone etc, older men have ability to urinate more than younger ones. These factors led to increased night-time urine production in older people. Also, it may be an alteration of sleep pattern with age. This study is similar to the study conducted by Andersson SO et al., [20].

Limitation(s)

Being a cross-sectional study, response-tolerance threshold varies from individual to individual. Smaller sample size also limits the study.

CONCLUSION(S)

In the present study, it was concluded that according to the IPSS Score, the main LUTS affecting QoL were nocturia and incomplete emptying of urinary bladder, LUTS associated with BPH have a significant negative impact on the QoL of patients. The IPSS and QoL questionnaires help the clinicians to better understand patients' symptoms and their impact and can aid in assessing the results of treatment. Validated Questionnaires can be extremely useful in clinical practice as well as research. Studies with larger sample size is recommended

REFERENCES

[1] Kevin T, McVary. BPH: Epidemiology and comorbidities. American Journal of Managed Care. 2006;12(5).S122-28.
[2] Wasserman NF. Benign prostatic hyperplasia: A review and ultrasound classification. Radiol Clin North Am. 2006;44(5):689-710.
[3] Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardisation of terminology in lower urinary tract function: Report from the Standardisation Sub-committee of the International Continence Society. Urology. 2003;61(1):37-49.
[4] Kupelian V, Wei JT, O'Leary MP, Kusek JW, Litman HJ, Link CL, et al. Prevalence of lower urinary tract symptoms and effect on quality of life in a racially and ethnically diverse random sample: The Boston Area Community Health (BACH) Survey. Arch Intern Med. 2006;166(21):2381-87.
[5] Wein Alan J, Kavoussi Louis R, Novick Andrew C, Partin Alan W, Peters Craig A. 9th edition. Campbell-Walsh Urology. 81-110.
[6] Mohan A, Kumar Gupta A. A review on the clinical utility of PSA in cancer prostate. Indian J Surg Oncol. 2012;3(2):120-29.
[7] The International Prostate Symptoms Score (IPSS) by Dr. Ananya Mandal.
[8] Jo JK, Kim KS, Nam JW, Choi BY, Moon HS. Sociodemographic Factors Related to Lower Urinary Tract Symptoms in Men: A Korean Community Health Survey. Int Neurourol J. 2017;21(2):143-51.
[9] Kamil C. Should international prostate symptom score solely guide the management of benign prostatic hyperplasia? J Urol Ren Dis. 2017; 2017(6):01-03.
[10] Lowe Franklin C. Treatment of lower urinary tract symptoms suggestive of benign prostatic hyperplasia: Sexual function. BJU International. 2005;95(s4):12-18.
[11] Nagarathnam M, Latheef SAA. Prevalence of lower urinary tract symptoms in patients of benign prostatic hyperplasia attending Tertiary Care Hospital in the State of Andhra Pradesh. J NTR Univ Health Sci. 2017;6(3):154-57.
[12] Girman CJ, Epstein RS, Jacobsen SJ, Guess HA, Panser LA, Oesterling JE, et al. Natural history of prostatism: Impact of urinary symptoms on quality of life in 2115 randomly selected community men. Urology. 1994;44(6):825-31.
[13] Lee E, Yoo KY, Kim Y, Shin Y, Lee C. Prevalence of lower urinary tract symptoms in Korean men in a community-based study. Eur Urol. 1998;33(1):17-21.
[14] Trueman P, Hood SC, Nayak US, Mrazek MF. Prevalence of lower urinary tract symptoms and self-reported diagnosed 'benign prostatic hyperplasia', and their effect on quality of life in a community-based survey of men in the UK. BJU Int. 1999;83(4):410-15.
[15] Tsukamoto T, Kumamoto Y, Masumori N, Miyake H, Rhodes T, Girman CJ, et al. Prevalence of prostatism in Japanese men in a community-based study with comparison to a similar American study. J Urol. 1995;154(2 Pt 1):391-95.
[16] Gacci M, Bartoletti R, Figlioli S, Sarti E, Eisner B, Boddi V, et al. Urinary symptoms, quality of life and sexual function in patients with benign prostatic hypertrophy before and after prostatectomy: A prospective study. BJU Int. 2003;91(3):196-200.
[17] Yoshimura K, Arai Y, Ichioka K, Terada N, Matsuta Y, Okubo K. Symptom-specific quality of life in patients with benign prostatic hyperplasia. Int J Urol. 2002;9(9):485-90.
[18] Mark S, Kirby R, Doyle S, Ioannou C. Burden of male lower urinary tract symptoms (LUTS) suggestive of benign prostatic hyperplasia (BPH)- focus on the UK. BJU Int. 2015;115(4):508-19.
[19] Ernest A, Shahrad A. The Connected Catheter for management of Chronic Urinary Retention (CUR) in an adult male with neurogenic bladder- Case study. Urol Case Rep. 2019;26:01-02.
[20] Andersson SO, Rashidkhani B, Karlberg L, Wolk A, Johansson JE. Prevalence of lower urinary tract symptoms in men aged 45-79 years: A population-based study of 40 000 Swedish men. BJU Int. 2004;94(3);327-31.

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