

# The Effects of Treating Lower Urinary Tract Symptoms on Health-Related Quality of Life: A Short-Term Outcome

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## ABSTRACTS

**Objectives:** This study examined the effects of treatment of lower urinary tract symptoms (LUTS) on the health-related quality of life (physical/functional, mental, social and global aspect), pain and prostatic symptoms.

**Patients and Methods:** The study consisted of 123 LUTS patients on medical treatment (alpha blockers) and 52 who underwent surgical treatment (TURP). The patients were assessed one week before and three months after medical and surgical treatment by using the Health-Related Quality of Life (HRQOL-20), the Visual Analogue Scale of Pain (VAS), the Present Pain Intensity (PPI) and the International Prostate Symptom Score (I-PSS) inventories and questionnaires.

**Results:** Prior to treatment, the surgically treated patients were found to suffer more pain, severe prostatic symptoms, bothersomeness and deterioration in health-related quality of life than the medically treated patients. Post-operatively, the surgical group showed a significant reduction and improvement in all aspects of pain, prostatic symptoms, bothersomeness and overall health-related quality of life, as compared with the medication group. The mean ages of the surgical and medical treated groups were 69.56 years (SD=7.94 years) and 64.62 years (SD=7.94 years) respectively.

**Conclusions:** The result showed that operative procedure had significantly improved the overall health-related quality of life of LUTS patients compared to those on medical treatment.

**Keywords:** lower urinary tract symptoms, Health-Related Quality of Life, Present Pain Intensity, Visual Analogue Scale, International Prostate Symptom Score

## INTRODUCTION

Lower urinary tract symptoms (LUTS) from benign prostatic hyperplasia (BPH) pose a significant impact on the quality of life of patients and its treatment can either impair or improve the quality of life of patients<sup>(1,2)</sup>. The aspects reported to be most affected and most important were sleep, anxiety, worry about the disease, mobility, leisure, daily activities, sexual activities and satisfaction with sexual relationship<sup>(3)</sup>. Men with LUTS had a higher level of bothersomeness attributed to urinary symptoms and more interference in selected daily living activities caused by urinary dysfunction. These were related to worry or concern over urinary function and prostate cancer with a higher level of embarrassment caused by urinary dysfunction compared with men who did not have BPH<sup>(4)</sup>. About half of the men with evidence of obstructive BPH reported interference with one or more activities of daily living compared with 28% of men without the conditions. Irritating symptoms such as frequency, urgency, nocturia were more bothersome and had more impact on quality of life than obstructive symptoms such as hesitancy, poor stream and dribbling<sup>(4)</sup>. Urinary tract infection (UTI), prostate protrusion into the bladder, formation of bladder stone, distension of urinary bladder, haematuria, chronic and acute retention of urine were all leading to painful urination and affecting their quality of life<sup>(5-7)</sup>.

This study aimed at assessing and evaluating the health-related quality of life of BPH patients before and after they underwent medical and surgical treatment.

## PATIENTS AND METHODS

This study was conducted at the University Hospital, Kuala Lumpur, a busy teaching general hospital which also serves as a secondary and tertiary referral centre. Patients were recruited as they presented at the Urology Ward and Clinic and followed up in the course of their management in the same institution. Ethical approval was obtained from the hospital ethics committee prior to the study. Patients who

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participated in this study gave their informed consent. A total of 175 men were recruited over a period of one year. One hundred and twenty-three patients who were on medical treatment ( $\alpha$ -blockers: prazosin, terazosin, doxazosin and alfuzosin) and 52 patients who underwent surgical treatment (Transurethral Resection of Prostate, TURP) were recruited in this study. Management decisions were entirely made by urologists based on clinical indications. All patients were assessed at recruitment prior to their treatment and at three months after commencement of medical therapy or following definitive surgery. The indications for surgery were acute and chronic retention, recurrent UTI, severe symptoms, failure of medical treatment and renal impairment secondary to bladder outlet obstruction (BOO) whereas the indications for medical treatment were based on symptoms, rectal examination, residual urine and uroflow rate. The retention group was selected for surgical treatment after failure of medical treatment and trial without catheter (TWOC). Assessment parameters included pain intensity, prostate symptoms score and health-related quality of life prior to therapy. The patients were interviewed using the standardised questionnaires and inventories. Due to the multiethnicity of the patients, translated versions of the questionnaires and inventories were used; verified based on the back-translation technique<sup>(8)</sup>. The questionnaires and inventories utilised were the Visual Analogue Scale of Pain (VAS)<sup>(9)</sup> and the Present Pain Intensity (PPI)<sup>(9)</sup>, the International Prostate Symptom Score (I-PSS)<sup>(10)</sup> and the Health-Related Quality of Life (HRQOL-20)<sup>(11)</sup>.

The Pain Visual Analogue Scale (VAS) and the Present Pain Intensity (PPI) which were derived from The Short-Form McGill Pain Questionnaire (SF-MPQ) is rated from No Pain (0 cm) to Worst Possible Pain on a 10 cm line. The PPI consists of a range of described pain intensity from mild to severe intensity of pain.

The International Prostate Symptom Score (I-PSS) is a numerical symptom scoring system that grades the severity of seven symptoms based on how frequently each symptom afflicts the sufferers. The scale for each symptom ranges from 0 (symptoms are never present) to five (symptoms always present). The seven symptoms are incomplete emptying, frequency, intermittency, urgency, weak stream, hesitancy and nocturia. The disease-specific quality of life or bothersomeness questions is a separate quality of life score and the scale ranges from 0 (delighted) to six (terrible). Frequency distributions of the total symptoms are based on three classifications: mild (0-7), moderate (8-19) and severe (20-35).

The HRQOL-20 questionnaire consists of 20 questions that were scored according to a length

of 10 cm Visual Analogue Scale (VAS). Patients were asked to place a mark on the line to indicate their status. The minimum and maximum scores for each questions were 0 and 10 respectively.

The global HRQOL scale was calculated by summing up the 20 VAS scores for the physical/functional dimension such as locomotion, sexual activity, appetite and sleeping (six questions), mental health status such as behaviour, cognitive and emotional aspects (six questions), social health status such as activity, social participation and personal relationship (six questions) and global (overall) quality of life (two questions). The sum of the scores for each group of questions gave three corresponding subscores (minimum 0, maximum 60) and an overall score (minimum 0, maximum 200) was calculated by combining the three subscores and those of the two general questions. Three questions explored the patients' perceived sexual status: two were from the physical/functional subscore (sexual desire, quality of erection) and one from the social subscore (satisfaction with sexual life). They were analysed separately by constructing a sexual score (minimum 0, maximum 30) from the responses to these three questions.

Statistical indices in this study were Student's t-test and Chi-squared test.

## RESULTS

### Socio-demography

Most of the patients who were on medical treatment fell under the age group of 60-69 years (44.72%), followed by 50-59 years (26.83%), 70-79 (23.58%), less than 50 years (4.07%) and above 80 years (0.81%). The mean age of this group was 64.62 years (SD=7.95 years). Most of surgically treated group fell under the age group of 70-79 (42.31%), 60-69 (36.54%), 50-59 (15.38%) and above 80 (5.77%) with a mean age of 69.56 years (SD=7.94 years). A significant difference was noted in their mean ages ( $t=3.76$ ,  $p\leq 0.0005$ ).

The Chinese (56.91%) formed the largest ethnic group of the medically treated patients followed by Indian (24.39%), Malays (14.63%) and Others (4.07%). Similarly in the surgically treated group, Chinese formed the largest ethnic group (51.92%) followed by Malays (26.92%), Indian (19.23%) and Others (1.92%). However, no significant difference was noted  $\chi^2 = 4.097$ , NS).

### Visual Analogue Scale of Pain

Most were accounted by the high level of pain observed in patients with indwelling urethral catheter for their urinary retention. Comparison between pre and post treatment, some showed a

**Table I. Health-related quality of life and related parameters in patients with lower urinary tract symptoms.**

	Premedication	Postmedication	PreTURP (Indwelling catheter)	PostTURP (Without indwelling catheter)	PreTURP (Without indwelling catheter)	PostTURP (Without indwelling catheter)
<b>Visual Analogue Scale (VAS)</b>						
Mean	0.69	0.63	3.13	2.81	0.15	0
SD	1.51	1.31	3.31	2.99	0.86	0
<b>Present Pain Intensity N(%)</b>						
No Pain	91 (73.98)	94 (76.42)	14 (41.18)	33 (97.06)	1 (5.56)	18 (100)
Mild	18 (14.63)	12 (9.76)	3 (8.82)	1 (2.94)	3 (16.67)	
Discomfort	9 (7.32)	14 (11.38)	2 (5.88)		4 (22.22)	
Distressing	2 (1.63)	3 (2.44)	7 (20.59)		6 (33.33)	
Horrible	2 (1.63)		3 (8.82)		3 (16.67)	
Excruciating	1 (0.81)		5 (14.71)		1 (5.56)	
<b>International Prostate Symptom Score (I-PSS) N(%)</b>						
Mild (0-7)	26 (21.14)	46 (37.40)	0	24 (0.59)	0	9 (50.00)
Moderate (8-19)	70 (56.91)	63 (51.22)	9 (26.40)	10 (29.41)	11 (61.11)	7 (38.89)
Severe (20-35)	27(21.95)	14 (11.38)	25 (73.53)	0	7 (38.89)	2 (11.11)
<b>Health-Related Quality of Life</b>						
<i>Physical/functional score</i>						
Mean	23.54	22.46	30.03	24.37	28.04	23.98
SD	8.54	9.35	7.28	6.79	8.65	7.69
<i>Mental score</i>						
Mean	20.5	18.87	26.33	19.55	19.68	16.88
SD	9.71	9.94	6.84	5.65	8.18	6.42
<i>Social score</i>						
Mean	21.92	20.43	35.22	25.95	28.34	22.76
SD	10.49	10.35	8.09	6.67	10.38	7.29
<i>Global assessment</i>						
Mean	6.56	6.68	9.65	7.97	8.58	6.22
SD	10.47	3.45	2.92	2.69	3.95	3.23
<i>HRQOL-20</i>						
Mean	72.46	68.34	101.24	77.46	84.63	69.89
SD	26.29	27.86	20.83	19.09	24.03	16.51

significant reduction in the pain levels in the surgical group as compared to the medication group. Surgically treated patients improved significantly more in pain score compared to those treated medically ( $t=5.185$ ,  $p \leq 0.0001$ ) The results are shown in Table I.

#### Present Pain Intensity

Among the surgically treated patients, patients with indwelling catheter suffered more pain than those without. After treatment, there was a significant improvement in the pain description in the surgical group as compared to the medication group. Comparison before and after treatment showed the greatest improvement in those patients who were in retention followed by those who were not in retention and finally the medication group. The results are shown in Table I, Fig. 1-3.

#### Prostatic symptomatology (I-PSS)

Table I shows the results of I-PSS at pre and post treatment. The surgical group had a significantly higher score of I-PSS. Comparison between pre

and post treatment showed that the TURP group improved significantly in prostatic symptomatology. 61.54% of the surgical group had a severe symptom score before surgical intervention against 3.85% after surgery, compared with 21.95% before medication and 11.38% after medical intervention ( $p \leq 0.0001$ ).

#### Incomplete emptying, frequency, intermittency, urgency, weak stream, hesitancy and nocturia

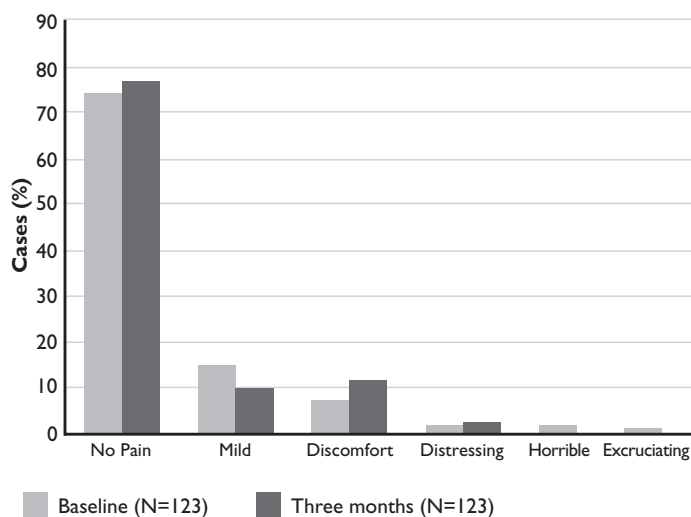
Comparison between pre and post treatment, indicated that greater improvement was seen after surgical treatment compared with medical treatment in sensation of incomplete emptying ( $t=13.83$ ,  $p \leq 0.0001$ ), frequency ( $t=8.57$ ,  $p \leq 0.0001$ ), intermittency ( $t=15.48$ ,  $p \leq 0.0001$ ), weak stream ( $t=15.23$ ,  $p \leq 0.0001$ ), hesitancy ( $t=8.13$ ,  $p \leq 0.0001$ ) and nocturia ( $t=6.51$ ,  $p \leq 0.0001$ ).

#### Disease-specific quality of life (bothersomeness)

As shown in Tables II, III, IV and V, the surgically treated patients showed the most dissatisfaction and unhappiness followed by the medication group prior to treatment. Conversely, the surgical group

**Table II.** The distribution of disease-specific quality of life according to the prostatic symptomatology in LUTS patients at pre and post treatment.

International Prostate Symptom Score (I-PSS)	Delighted N (%)	Pleased N (%)	Mostly satisfied N (%)	Mixed/Neutral N (%)	Mostly dissatisfied N (%)	Unhappy N (%)	Terrible N (%)
<b>Medication group (alpha blockers)</b>							
<i>Mild symptoms</i>							
Baseline	0	1 (0.81)	16 (13.01)	3 (2.44)	3 (2.44)	3 (2.44)	0
Three months	0	5 (4.07)	27 (21.95)	9 (7.32)	3 (2.44)	2 (1.63)	0
<i>Moderate symptoms</i>							
Baseline	1 (0.81)	1 (0.81)	17 (13.82)	19 (15.45)	18 (14.63)	14 (11.38)	0
Three months	1 (0.81)	2 (1.63)	11 (8.94)	27 (21.95)	17 (13.82)	5 (4.07)	0
<i>Severe symptoms</i>							
Baseline	0	1 (0.81)	2 (1.63)	3 (2.44)	10 (8.13)	10 (8.13)	1 (0.81)
Three months	0	0	0	3 (2.44)	4 (3.25)	6 (4.88)	1 (0.81)
<b>Indwelling catheter group (TURP)</b>							
<i>Mild symptoms</i>							
Baseline	0	0	0	0	0	0	0
Three months	0	8 (23.53)	15 (44.12)	1 (2.94)	0	0	0
<i>Moderate symptoms</i>							
Baseline	0	0	1 (2.94)	1 (2.94)	5 (14.71)	1 (2.94)	1 (2.94)
Three months	0	2 (5.88)	6 (17.65)	2 (5.88)	0	0	0
<i>Severe symptoms</i>							
Baseline	0	0	0	0	7 (20.59)	17 (50.00)	1 (2.94)
Three months	0	0	0	0	0	0	0
<b>Without indwelling catheter group (TURP)</b>							
<i>Mild symptoms</i>							
Baseline	0	0	0	0	0	0	0
Three months	1 (5.56)	2 (11.11)	6 (33.33)	0	0	0	0
<i>Moderate symptoms</i>							
Baseline	0	2 (5.88)	6 (17.65)	2 (5.88)	0	0	0
Three months	1 (5.56)	0	4 (22.22)	2 (11.11)	0	0	0
<i>Severe symptoms</i>							
Baseline	0	1 (5.56)	0	0	3 (16.67)	3 (16.67)	0
Three months	0	0	0	0	0	2 (11.11)	0

**Fig. 1** The descriptive pattern of Present Pain Intensity at baseline and three months in the medication group.

showed significantly better disease-specific quality of life after treatment than medication group. Greater improvement was seen after surgical treatment compared with medication in all mild, moderate and severe categories of I-PSS (Table II). Comparison between pre and post treatment showed there was a significant improvement in the disease-specific quality of life (bothersomeness) in the surgical group compared to the medication group after treatment ( $p \leq 0.0001$ ) (Fig. 4-6).

#### Health-Related Quality Of Life

Table I shows the health-related quality of life at pre and post treatment. Before treatment, the surgical group had significantly lower quality of life than the medication group in all parameters studied [physical score ( $t=4.21$ ,  $p \leq 0.0001$ ), mental score ( $t=2.32$ ,  $p \leq 0.05$ ), social score ( $t=6.49$ ,  $p \leq 0.0001$ ), global score ( $t=4.70$ ,  $p \leq 0.0001$ ) and overall health-related quality of life ( $t=5.49$ ,  $p \leq 0.0001$ )] with those who were in retention most severely effected.

Comparison between pre and post treatment showed a high significant difference in the health-related quality of life in the surgical group compared with the medication group. Significant improvement was shown in physical score ( $t=7.02$ ,  $p\leq 0.0001$ ), mental score ( $t=7.30$ ,  $p\leq 0.0001$ ), social score ( $t=10.14$ ,  $p\leq 0.0001$ ), global score ( $t=5.88$ ,  $p\leq 0.0001$ ) and overall health-related quality of life ( $t=10.24$ ,  $p\leq 0.0001$ ).

In the surgical group, only a few patients experienced incidence of incontinence while some of the patients complained of frequency during the first month and subsequently improved at three months. The incidence of retrograde ejaculation was 44% in this study while 2.0% had reduced volume of semen. The incidence of impotence was relatively small. Some patients complaining of reduced erections while some experienced improvement of erections.

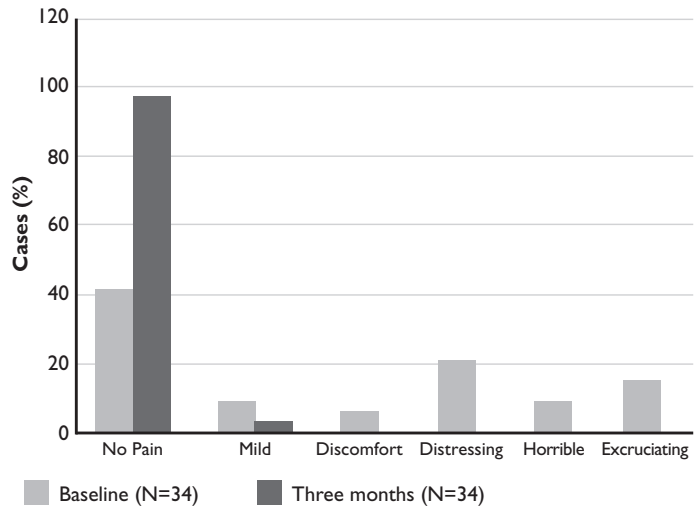
**DISCUSSION**

This study showed LUTS had a significant effect on their health-related quality of life. Among the quality of life that were affected were psychological well-being, restriction in their daily and social activities and relationship, bothersomeness, anxiety, depression, sexual function and deterioration in general health perception. These findings were similarly noted in other studies<sup>(1-3,27,28)</sup>.

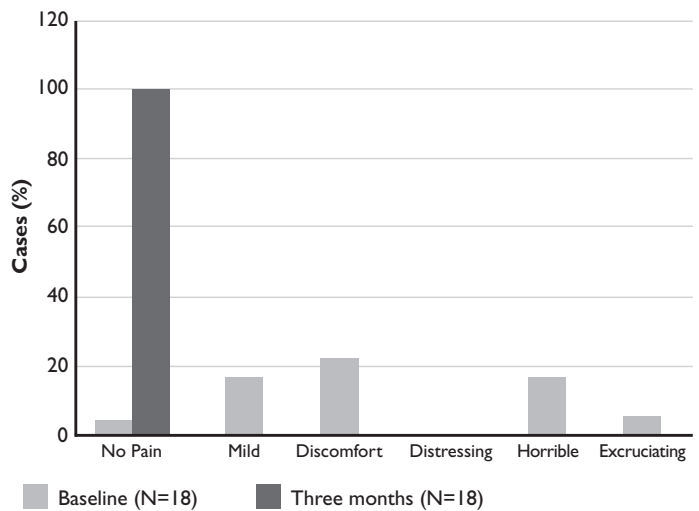
Prior to surgery, the surgical group, especially those who were in retention, was found to suffer more pain than the non-retention and medication group. Pain could be due to indwelling catheter, urinary tract infection (UTI) which causes dysuria and prostatitis, prostate protrusion into the bladder, formation of bladder stone, distension of the urinary bladder and stimulant of afferent sensory nerve endings in the bladder wall, chronic and acute retention of urine leading to painful urination<sup>(5-7)</sup>. After treatment, there was a significantly greater reduction in pain intensity after surgery compared with the medication. Surgical treatment relieved pain associated with LUTS more effectively than medication.

It was found that the more severe the prostatic symptoms especially in the TURP patients such as chronic and acute retention of urine and pain, the greater were their effects on daily functioning, activities and bothersomeness. Surgery was effective in reducing the urinary symptoms for most patients and compared with medication, the improvement was more marked. Among patients who presented with acute retention of urine, all aspects of quality of life improved except for retrograde ejaculation, erectile function and overall sexual satisfaction. The sexual dysfunction following surgery had contributed to the deterioration of quality of life in some patients. However, a majority

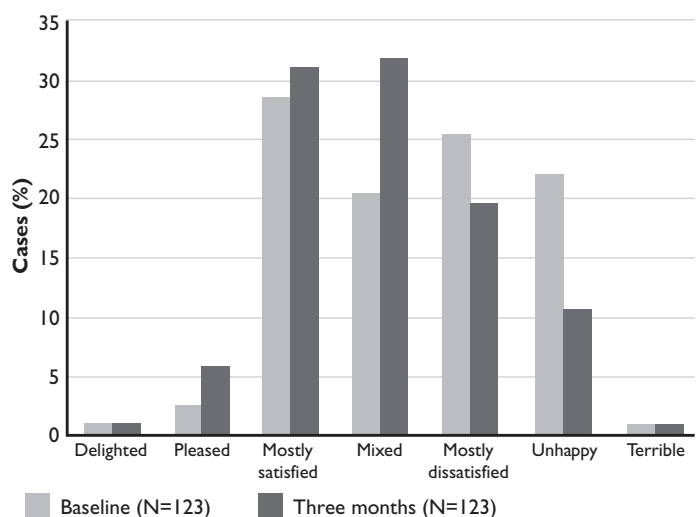
**Fig. 2** The Present Pain Intensity of LUTS patients with indwelling catheter at pre and post-operative.



**Fig. 3** The Present Pain Intensity in LUTS patients without indwelling catheter at pre and post-operative.



**Fig. 4** The disease-specific quality of life at baseline and three months in the medication group.



**Table III. The distribution of disease-specific quality of life according to the prostatic symptomatology in LUTS patients with alpha blockers treatment.**

I-PSS	Delighted N (%)	Pleased N (%)	Mostly satisfied N (%)	Mixed/Neutral N (%)	Mostly dissatisfied N (%)	Unhappy N (%)	Terrible N (%)
<b>Mild</b>							
Pre medication	0	1 (0.81)	16 (13.01)	3 (2.44)	3 (2.44)	3 (2.44)	0
Post medication	0	5 (4.07)	27 (21.95)	9 (7.32)	3 (2.44)	2 (1.63)	0
<b>Moderate</b>							
Pre medication	1 (0.81)	1 (0.81)	17 (13.82)	19 (15.45)	18 (14.63)	14 (11.38)	0
Post medication	1 (0.81)	2 (1.63)	11 (8.94)	27 (21.95)	17 (13.82)	5 (4.07)	0
<b>Severe</b>							
Pre medication	0	1 (0.81)	2 (1.63)	3 (2.44)	10 (8.13)	10 (8.13)	1 (0.81)
Post medication	0	0	0	3 (2.44)	4 (3.25)	6 (4.88)	1 (0.81)

**Table IV. The distribution of disease-specific quality of life according to the prostatic symptomatology in LUTS patients with indwelling catheter at pre and post-operative.**

I-PSS	Delighted N (%)	Pleased N (%)	Mostly satisfied N (%)	Mixed/Neutral N (%)	Mostly dissatisfied N (%)	Unhappy N (%)	Terrible N (%)
<b>Mild</b>							
Pre TURP	0	0	0	0	0	0	0
Post TURP	0	8 (23.53)	15 (44.12)	1 (2.94)	0	0	0
<b>Moderate</b>							
Pre TURP	0	0	1 (2.94)	1 (2.94)	5 (14.71)	1 (2.94)	1 (2.94)
Post TURP	0	2 (5.88)	6 (17.65)	2 (5.88)	0	0	0
<b>Severe</b>							
Pre TURP	0	0	0	0	7 (20.59)	17 (50.00)	1 (2.94)
Post TURP	0	0	0	0	0	0	0

**Table V. The distribution of disease-specific quality of life according to the prostatic symptomatology in LUTS patients without indwelling catheter at pre and post-operative.**

I-PSS	Delighted N (%)	Pleased N (%)	Mostly satisfied N (%)	Mixed/Neutral N (%)	Mostly dissatisfied N (%)	Unhappy N (%)	Terrible N (%)
<b>Mild</b>							
Pre TURP	0	0	0	0	0	0	0
Post TURP	1 (5.56)	2 (11.11)	6 (33.33)	0	0	0	0
<b>Moderate</b>							
Pre TURP	0	2 (5.88)	6 (17.65)	2 (5.88)	0	0	0
Post TURP	1 (5.56)	0	4 (22.22)	2 (11.11)	0	0	0
<b>Severe</b>							
Pre TURP	0	1 (5.56)	0	0	3 (16.67)	3 (16.67)	0
Post TURP	0	0	0	0	0	2 (11.11)	0

reported no changes in their quality of life probably because of their improved lifestyle and some men were not sexually active at their advanced age. Similar findings were also noted in other studies<sup>(12-14)</sup>. Improvement in the disease-specific quality of life (bothersomeness) was also noted in this study as in other study<sup>(15)</sup>. Irritating symptoms such as frequency and nocturia and obstructive symptoms (terminal dribbling and hesitancy) were the most common complaints especially in the surgical group and in the medication group with severe urinary symptoms. Prior to surgical and medical intervention, the irritating symptoms had caused patients to be more bothered and had more impact on their quality life

than the obstructive symptoms. A similar finding was also noted by another study<sup>(16)</sup>.

A significant association was also found between severity of prostate symptoms score more than seven and age groups. As age increases, the severity of prostate symptom score also increases. This is because as age increases, the prostate gland enlarges and this causes the increase of the prostatic symptoms. Similar observations had been reported in comparable Asian studies<sup>(17-22)</sup>.

The surgical group especially those in retention had a significantly higher degree of bothersomeness pre-operatively due to the urinary symptoms and interference in daily living. Many worried about

having prostate cancer and were embarrassed by urinary dysfunction<sup>(2)</sup>. However, they improved significantly in bothersomeness following treatment compared to the medication group.

The overall health-related quality of life in both surgical and medical groups were severely affected by the disease prior to treatment. Daily living and activities fared badly prior to treatment especially in the surgical group. This reflects the fact that only very severe cases were selected for surgery. Many of these patients had indwelling catheters, which of course drastically affected their quality of life. Among the physical and functional, as well as mental and social domains which affect the quality of life are sleep, tiredness, mood changes, worries and anxious, activities with family and friends, sexual life and satisfaction of current life<sup>(23-28)</sup>.

The majority of the patients with LUTS tend to alter their lifestyle to help them cope with their symptom. For example, they limit their fluid intake, consciously empty their bladders before they get to be full and uncomfortable, and confine their activities to places of easy access to toilets. Some even bring a urinal when driving long distances. All these lead to worry and anxiety, discomfort, embarrassment and uneasiness, which subsequently affect their quality of life.

Those who failed medical treatment were mainly due to the ineffectiveness of alpha blockers in improving their LUTS and thus their quality of life remained unchanged or improved. In the surgical group, those who failed the surgical treatment were mainly due to the complications arising following TURP. Among the complications were frequency and incontinence.

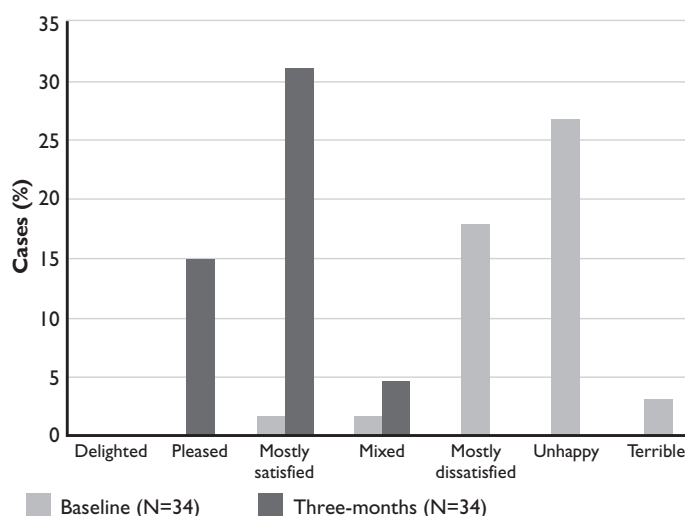
## CONCLUSION

The assessment of quality of life has recently been recognised as an important component in the natural history of BPH. Symptom frequency alone is insufficient in the management of BPH<sup>(26)</sup>. One has to look into other social and psychological factors involved in its treatment and management. This study provides a better understanding on the impact of the disease on patients' quality of life and also acts as guidelines in future research in terms of improving patient management and treatment.

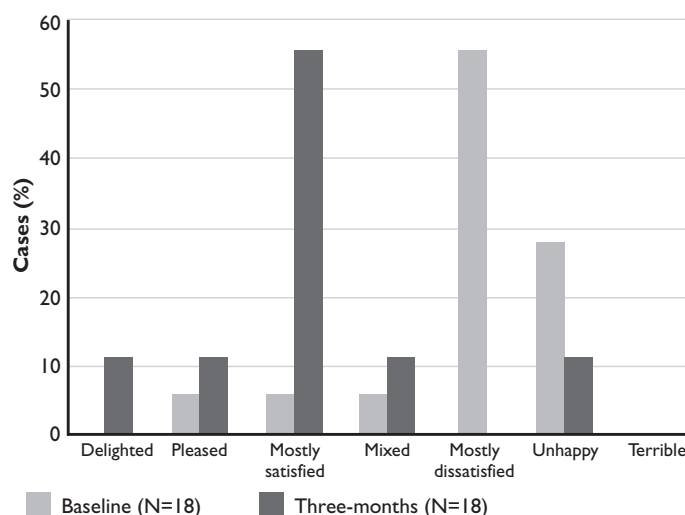
## ACKNOWLEDGEMENT

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**Fig. 5** The disease-specific quality of life in LUTS patients with indwelling catheter at pre and post-operative in the TURP group.



**Fig. 6** The disease-specific quality of life in LUTS patients without indwelling catheter at pre and post-operative in the TURP group.



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