



# Health-related quality of life, psychological well-being, and sexual function in patients with benign prostatic hyperplasia after prostatic surgery



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## ABSTRACT

**Aims and background:** Patients with benign prostatic hyperplasia (BPH) may receive prostatic surgery due to severe lower urinary tract symptoms (LUTS). This study aimed to investigate the health-related quality of life (HRQoL), psychological well-being, and sexual function of patients with BPH after prostatic surgery and identify the predictors of HRQoL among this group of patients.

**Methods:** This was a cross-sectional, descriptive, correlational study. A convenience sample of 94 participants was recruited from a urology center in a tertiary public hospital in Singapore. The 12-item Short Form Health Survey version 2 (SF-12v2), International Prostate Symptom Score (IPSS), Hospital Anxiety and Depression Scale (HADS), and 5-item International Index of Erectile Function (IIEF-5) were used to measure the study variables.

**Results:** Compared to the general population norms and the findings of similar studies conducted in western countries, this group of patients reported poorer physical health but better mental health as assessed by SF-12v2. Despite the prostatic surgery, over a quarter of the patients experienced moderate LUTS, and 13.8% experienced severe erectile dysfunction. Multiple linear regression analysis identified that LUTS ( $B = -0.51$ ,  $p = 0.02$ ) and maximum flow rate ( $B = -0.23$ ,  $p = 0.02$ ) predicted poor physical health, accounting for 45.9% of variance, while HADS-Anxiety ( $B = -1.07$ ,  $p < 0.01$ ) and LUTS ( $B = -0.32$ ,  $p = 0.03$ ) predicted poor mental health, accounting for 57.2% of variance.

**Conclusion:** The physical health of BPH patients with prostatic surgery was poor, with many suffering moderate LUTS and sexual dysfunction. Special attention should be given to those patients with severe LUTS who have a low maximum flow rate or have anxiety symptoms.

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## 1. Introduction

Benign prostatic hyperplasia (BPH) is an increasingly prevalent medical condition in aging societies, including Singapore. It is often associated with lower urinary tract symptoms (LUTS), poor health-related quality of life (HRQoL), and sexual dysfunction (Roehrborn, 2011). Although pharmacological interventions are used as a first-line treatment, prostatic surgery remains the only option for patients who have severe LUTS or do not respond to medications (Priest, Garzotto, & Kaufman, 2012). Transurethral resection of the prostate (TURP) is the gold standard of surgical treatment of BPH (Gravas et al., 2011). However, criticism of the complications of TURP and the development

of minimally invasive therapies (MISTs) have resulted in a drop in the proportion of TURPs performed (Gravas et al., 2011). Nonetheless, there are approximately 6000 TURPs performed annually in Singapore (Ministry of Health, 2013).

Over the past decade, HRQoL has assumed increasing prominence as an important measure of health outcomes. There is no consensus about the definition of HRQoL, and it refers to an individual's life expectancy, satisfaction with life, functional ability, and physiological and psychological well-being (Cella et al., 2007). HRQoL can be measured using generic or disease-specific instruments. The 12-item Short Form Health Survey version 2 (SF-12v2) is an example of a generic measure, while the International Prostate Symptom Score (IPSS) is a widely used disease-specific HRQoL measure in patients with BPH (Seki et al., 2008). Generic instruments measure a wide spectrum of HRQoL components and are comparable between diseases and different cultural populations, whereas disease-specific instruments provide greater sensitivity for populations with specific illnesses or conditions (Mortimer & Segal, 2008). Using a combination of both generic and disease-specific instruments provides a more comprehensive evaluation of the impact of the disease and effects

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of treatment (Cam et al., 2013). However, few studies have been found that measure the HRQoL in patients with BPH after surgery using a combination of generic and disease-specific instruments.

A recent meta-analysis reported that prostatic surgery improves the HRQoL of patients with BPH by up to 69%, using the disease-specific IPSS-QoL scale (Ahyai et al., 2010). Although the development of hematuria after surgery occurred in 3.5% of patients, the improvements in HRQoL within 1 to 3 months after surgery were between 36% and 50%, which was significantly greater than with pharmacological interventions (Ahyai et al., 2010). However, most of the studies reviewed were conducted with patients from the west (Ahyai et al., 2010), and there is a paucity of research emanating from the east, such as Singapore, where cultural, social, and economic contexts are significantly different. In addition, the HRQoL of BPH patients after prostatic surgery has not been fully explored using generic instruments that allow for comparison with general population norms and other medical conditions. Likewise, psychological well-being and sexual function of these patients are not well understood. Hence, the purpose of this study was to investigate the HRQoL, psychological well-being, and sexual function of BPH patients after prostatic surgery and to identify the predictors of HRQoL in this group of patients in Singapore.

## 2. Research methods

### 2.1. Study design and sample

A cross-sectional, descriptive, correlational design was used. The study was conducted in a urology center at a tertiary public hospital in Singapore. The data were collected from October 2013 to February 2014. The target population was BPH patients after prostatic surgery in this tertiary hospital in Singapore. A convenience sampling was adopted. The inclusion criteria were patients who were: (1) diagnosed with BPH and had undergone either TURP or MISTs (e.g. transurethral needle ablation of the prostate); (2) aged 21 years and older; and (3) able to read and understand English or Chinese. Patients with significant renal dysfunction, neurogenic bladder dysfunction or with a history of mental illness and/or cognitive impairment, or who had undergone open prostatectomy were excluded.

In this study, multiple linear regression analysis was one of the main statistical tests used. For the multiple linear regression, five independent variables (i.e. age, LUTS, anxiety, depression, and sexual function) were anticipated as significant predictors of HRQoL based on the literature review (Gacci et al., 2011; Quek, 2005; Reich, Gratzke, & Stief, 2006; Roehrborn et al., 2011). To achieve a medium effect size at 80% and power at 5% significance level (2-sided), a minimum of 91 participants was required (Cohen, 1992).

### 2.2. Research instruments

#### 2.2.1. 12-item Short Form Health Survey version 2 (SF-12v2)

The SF-12v2 is a widely used generic HRQoL questionnaire consisting of 12 items. Respondents score eight subscales of general health, physical function, role—physical, bodily pain, vitality, role—emotional, mental health, and social function (Ware, Kosinski, & Keller, 1996). These subscales are grouped into two domains: physical component summary (PCS) and mental component summary (MCS), allowing an evaluation of the physical and mental HRQoL of an individual. The SF-12v2 has good internal consistency with Cronbach's alpha of 0.77 and 0.80 for the PCS and the MCS respectively (Luo et al., 2003). The Chinese version of the SF-12v2 also demonstrated good reliability and has been widely used for Chinese-speaking patients (Lam, Tse, & Gandek, 2005). In this study, the SF-12v2 has also showed acceptable internal consistency with Cronbach's alpha of 0.74 for the total scale.

#### 2.2.2. International Prostate Symptom Score (IPSS)

The IPSS is a measure of the severity of LUTS, including seven symptoms: incomplete emptying, frequency of urination, intermittency,

urgency, weak stream, hesitancy, and nocturia. The frequency of these symptoms is recorded on a Likert scale ranging from 0 (symptoms not present) to 5 (symptoms always present) (Barry et al., 1992). The IPSS also includes a disease-specific QoL item, in which the individuals express their satisfaction with their urinary symptoms on a scale of 0 to 6 (delighted to terrible). The total score is then tabulated, and the following ranges reflect the severity of LUTS: mild (0–7), moderate (8–19), and severe (20–35) (Barry et al., 1992). The IPSS has good internal consistency and test-retest reliability with Cronbach's alpha of 0.86 and an intraclass correlation coefficient (ICC) of 0.92 (Barry et al., 1992). The Chinese version of the IPSS also demonstrated good reliability with a Cronbach's alpha of 0.90 to 0.98, and the ICC was 0.91 to 0.99 for the subscales respectively (Quek, Chua, Razack, Low, & Loh, 2005). In this study, the IPSS has acceptable internal consistency reliability with Cronbach's alpha of 0.70.

#### 2.2.3. Hospital Anxiety and Depression Scale (HADS)

The HADS is a widely used screening tool to assess anxiety and depression (Zigmond & Snaith, 1983). It consists of 14 items, equally divided into questions that assess either anxiety (HADS-A) or depression (HADS-D). Patients rank each question on a Likert scale from 0 to 3, and ranging from 0 to 21 for each subscale. A total score of 8 or above was identified as an optimal cut-off score for caseness for both anxiety and depression (Bjelland, Dahl, Haug, & Neckelmann, 2002). The HADS has been validated extensively in numerous studies spanning various illnesses and showed good internal consistency with a Cronbach's alpha of 0.85 to 0.91 for the anxiety scale and 0.79 to 0.92 for the depression scale (Hinz, Zweynert, Kittel, Igl, & Schwarz, 2009; Mehnert, Lehmann, Graefen, Huland, & Koch, 2010). The Chinese version of the HADS also has good internal consistency with Cronbach's alpha of 0.85 and acceptable ICC of 0.90 (Wang, Chair, Thompson, & Twinn, 2009). In this study, the HADS had good internal consistency with Cronbach's alpha of 0.85 and 0.82 for the subscales of HADS-A and HADS-D respectively.

#### 2.2.4. 5-Item International Index of Erectile Function (IIEF-5)

The IIEF-5 is a 5-item questionnaire generated from the validated and translated IIEF-15 (Dargis et al., 2013). It was developed to be a simple yet accurate diagnostic test of sexual dysfunction (Cappelleri & Rosen, 2005). The possible scores for the IIEF-5 range from 5 to 25, and erectile dysfunction (ED) was classified into five categories based on the scores (severe: range = 5–7; moderate: range = 8–11; mild to moderate: range 12–16; mild: range = 17–21; and no ED: range = 22–25) (Cappelleri & Rosen, 2005). The IIEF-5 has good internal consistency, with a Cronbach's alpha of 0.83 to 0.96 (Dargis et al., 2013). The IIEF-5 Chinese version has been used in many studies with Chinese-speaking patients and has demonstrated good reliability and validity (Gwee et al., 2012; Liang et al., 2010). In this study, the IIEF-5 has good internal consistency with Cronbach's alpha of 0.96.

#### 2.2.5. Socio-demographic profile and clinical data sheet

The socio-demographic profile of the participants—including age, marital status, education level, employment status, monthly income, and race—was assessed. Clinical data—including type of prostatic surgery, post-operative duration, length of hospital stay, smoking status, maximum flow rate ( $Q_{max}$ ), and post-void residual urine (PVRU)—were also collected from the participant's medical chart.

### 2.3. Data collection procedure

Recruitment of participants took place during their visits to the urology center. A staff nurse from the urology center was assigned to facilitate proper identification of suitable participants based on the methodical screening of the daily appointment list and inclusion and exclusion criteria. A total of 202 patients were screened, and the eligible participants who met the study criteria were approached in a waiting area of the urology center. Those who agreed to participate in this

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