THE CORRELATION BETWEEN VISUAL PROSTATE SYMPTOM SCORE AND THE INTERNATIONAL PROSTATE SYMPTOM SCORE IN GRADING LOWER URINARY TRACT SYMPTOMS IN BPH AT MUHIMBILI NATIONAL HOSPITAL

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Department of Surgery

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By

Joseph Martin Lori,

A Dissertation submitted in (partial) Fulfillment of the Requirements for the Degree of Masters of Medicine (Urology) at

Muhimbili University of Health and Allied sciences

October 2024

CERTIFICATION

The undersigned certify that they have read and hereby recommend for examination of dissertation entitled **"The Correlation Between Visual Prostate Symptom Score and The International Prostate Symptom Score in Grading Lower Urinary Tract Symptoms in BPH at Muhimbili National Hospital",** in fulfillment of the requirements for the degree of Master of Medicine (Urology) of Muhimbili University of Health and Allied Sciences.

_____

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Date: _____

DECLARATION AND COPYRIGHT

I, Joseph Martin Lori, declare that this dissertation is my original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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DEDICATION

I dedicate this reseach to my Dad, the late Mwl. **Martin G. Lori**, for always making me believe in myself; may your soul keep resting in eternal peace, Amen.

I dedicate this research to my beloved wife **Lucy Protas Michael** and my son **Andrick Joseph Lori** for their patience, unwavering love, and support. Their understanding has given me strength and determination during this journey.

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ABSTRACT

Background: The prevalence of benign prostatic hyperplasia (BPH) varies by ethnicity, with aging men at higher risk. The Visual Prostate Symptom Score (VPSS) offers a user-friendly alternative to the International Prostate Symptom Score (IPSS), especially for elderly patients. While previous studies compare VPSS and IPSS, there's a gap in validating VPSS for use in Tanzania and its correlation with IPSS, warranting further investigation.

Objectives: This study conducted a comparative analysis of IPSS and VPSS in Tanzanian patients, assessing LUTS and BPH severity before and after treatment at Muhimbili National Hospital's Urology Department.

Methodology: This longitudinal observational study at MNH in Dar es Salaam examined the correlation between VPSS and IPSS for grading LUTS in BPH patients aged 40 and above. Outpatients and inpatients with LUTS were included, employing a consecutive sampling approach. Participants completed Swahili versions of both the 7-question IPSS and the 4-pictogram VPSS. Data collection occurred pre-treatment and at a three-month follow-up to assess changes in correlation. Statistical analysis utilized SPSS version 27.

Results: In a study of 137 BPH patients with LUTS, aged 62–76 (median 70), the median prostate volume decreased from 49.0mL pre-treatment to 35.0mL post-treatment. Most patients (94.2%) were literate in Swahili, with significant differences in completing IPSS based on literacy ($p = 0.042$), but no difference for VPSS ($p = 0.999$). Both IPSS and VPSS scores improved significantly post-treatment, showing strong correlations between them before ($r = 0.648$) and after treatment ($r = 0.732$), confirming their reliability in assessing LUTS severity.

Conclusion: The study demonstrates the effectiveness of both IPSS and VPSS in evaluating LUTS severity in BPH patients, with VPSS being suitable for both literate and illiterate patients. Significant correlations between VPSS and IPSS before and after treatment suggest VPSS as a reliable tool for assessing symptom severity, prostate volume, and quality of life. Its adoption in routine clinical practice can enhance the management of BPH patients, improving symptom monitoring and treatment outcomes.

TABLE OF CONTENTS

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGMENT iii
DEDICATION v
ABSTRACT vi
LIST OF FIGURES xi
LIST OF TABLES xi
LIST OF ABBREVIATIONS xii
DEFINITION OF KEY TERMS xiii
CHAPTER ONE 1
1.0 INTRODUCTION 1
1.1 Background 1
1.2 Problem Statement 3
1.3 Rationale of the Study 4
1.4 Conceptual Framework 5
1.5 Research question 6
1.5.1 Specific Research Questions 6
1.6 Broad Objective 6
1.6.1 Specific Objectives 6
CHAPTER TWO 7
2.0 LITERATURE REVIEW 7
2.1 Socio-demographic characteristics of patients with LUTS related to BPH 7
2.2 Correlation between VPSS and IPSS assessment before treatment 9
2.3 Correlation between changes in VPSS and IPSS assessment after treatment 10
CHAPTER THREE 11
3.0 MATERIALS AND METHODS 11
3.1 Study Design 11
3.2 Study Area 11
3.3 Study Population 11

3.4 Inclusion and exclusion criteria 11
3.4.1 Inclusion Criteria 11
3.4.2 Exclusion Criteria 12
3.5 Sample Size and Selection 12
3.5.1 Sampling strategy 12
3.5.2 Sample size estimation 12
3.5 Study Variables 13
3.6 Data Collection Methods 13
3.6.1 Recruitment and Training of Research Assistants 16
3.7 Investigation tools, validity, and reliability 16
3.8 Data processing and analysis 16
3.8.1 Data Management 16
3.8.2 Data Analysis 16
3.9 Ethical issues 17
CHAPTER FOUR 18
4.0 ANALYSIS AND RESULT PRESENTATION 18
4.1 Patients' characteristics 18
4.1.1 Patient Characteristics in Completing IPSS and VPSS 18
4.2 Correlation between IPSS and VPSS before treatment 21
4.3 Correlation between IPSS and VPSS after treatment 22
CHAPTER FIVE 25
5.0 DISCUSSION 25
5.1 Introduction 25
5.2 Patients' Demographics Presentations 25
5.3 Patient Characteristics in Completing IPSS and VPSS 26
5.4 Correlation of Assessment tools after treatment 27
CHAPTER SIX 28
6.0 CONCLUSION, LIMITATIONS AND RECOMMENDATION 28
6.1 Limitations 28
6.2 Conclusion 28
6.3 Recommendation 29
REFERENCES 30

APPENDICES....34
Appendix IA: Consent Form (English version)....34
appendix IB: Consent Form (Swahili version)....36
Appendix IIA: Questionnaire (English)....38
Appendix IIB: Swahili Questionnaire....40
Appendix IIIA: International Prostate Symptom Score (English Version)....44
Appendix V: Permission Letter....50
Appendix VI: Permission Letter....51

LIST OF FIGURES

Figure 1: Conceptual framework illustrating the relationship between the variables5

Figure 2: VPSS comprised of a pictogram to evaluate (A) frequency, (B) nocturia, (C) strength of the urine stream, and (D) QoL. 15

Figure 3: IPSS vs VPSS score scatter plot.....24

LIST OF TABLES

Table 1: Characteristics of patients with LUTS assessed using IPSS and VPSS, 19

Table 2: Patients' characteristics in completing assessment using IPSS and VPSS 20

Table 3: Spearman correlation between IPSS and VPSS before treatment.....21

Table 4: Spearman correlations reflecting the relationship between changes in VPSS and IPSS following treatment.....23

LIST OF ABBREVIATIONS

AFR	Average Flow Rate
AUR	Acute Urinary Retention
BOO	Bladder Outlet Obstruction
BPH	Benign Prostatic Hyperplasia
IPSS	International Prostate Symptom Score
LUTS	Lower Urinary Tract Symptoms
MFR	Maximum Flow Rate
MNH	Muhimbili National Hospital
MUHAS	Muhimbili University of Health and Allied Science
VPSS	Visual Prostate Symptom Score
QoL	Quality of Life
TURP	Transurethral Resection of the Prostate

DEFINITION OF KEY TERMS

International Prostate Symptom Score (IPSS) is a widely used questionnaire for evaluating the severity of lower urinary tract symptoms (LUTS) associated with prostate enlargement.

Visual Prostate Symptom Score (VPSS) is a scoring system used to assess the severity of lower urinary tract symptoms (LUTS) related to prostate enlargement. It is a visual tool that allows individuals to self-assess and communicate their symptom severity to healthcare professionals.

Lower urinary tract symptoms refer to a range of symptoms that occur due to dysfunction or abnormalities in the lower urinary tract, which includes the bladder, urethra, and prostate (in men). LUTS can manifest as storage symptoms: urgency, increased frequency of micturition, nocturia, and incontinence. Voiding symptoms; weak urinary stream, hesitancy, incomplete bladder emptying, and straining.

Benign Prostatic Hyperplasia (BPH) is a disease of older age whose development and progression involves cellular proliferation of both epithelial and stromal cells of the prostate gland transitional zone.

Correlation refers to a statistical measure that indicates the extent to which two or more variables change together, or the degree of association between them. In other words, it quantifies the relationship between variables, showing whether and how changes in one variable are associated with changes in another variable. Correlation does not imply causation; it only reflects the degree of linear relationship between variables.

CHAPTER ONE

1.0 INTRODUCTION

Benign prostate hyperplasia (BPH) is a primary contributor to health concerns related to the aging process worldwide. It ranks among the most common conditions affecting older men.[1] BPH is genuinely a histological diagnosis due to the hyperplasia of smooth muscles and epithelial cells inside the tissue of the prostate [2,3]. BPH is regarded as a significant health issue owing to its prevalence and effects on the quality of life of those who are affected and they usually present with lower urinary tract symptoms (LUTS).

The International Prostate Symptom Score (IPSS) functions as a crucial assessment tool for grading LUTS and BPH. It offers significant advantages in longitudinally monitoring symptom dynamics and assessing treatment efficacy over time [4–6]. Consequently, guidelines strongly endorse the obligatory incorporation of the IPSS questionnaire for a comprehensive evaluation and follow-up of patients experiencing LUTS and BPH [7].

1.1 Background

The prevalence of BPH varies across different ethnic groups and geographic regions, with higher rates reported in Western countries [2,8]. The precise etiology of BPH remains incompletely understood. However, several factors are believed to contribute to its development. Age-related hormonal changes, particularly the imbalance between testosterone and estrogen, play a crucial role. Other factors such as genetic predisposition, chronic inflammation, and alterations in growth factors and androgen receptors have also been implicated [8–10]. LUTS are associated with BPH which is primarily observed in aging men, with prevalence increasing with age. It is estimated that by the sixth decade of life, over 50 percent of men will have histological evidence of BPH, and by the age of 85, this percentage increases to nearly 90% [9].

Moreover, a significant proportion of BPH patients fall within the age bracket of 60 to 80 years and commonly experience visual impairments and/or cognitive limitations [11]. As a consequence, these patients frequently require the guidance of medical specialists while completing the IPSS questionnaire [12]. This dependence on assistance may potentially introduce bias in the patients' responses [2,12]. An innovative and recently introduced scoring system called the Visual Prostate Symptom Score (VPSS) by Van der Walt et al has surfaced, offering a promising resolution to this predicament [12]. The VPSS encompasses four simplistic and visually intuitive interrogatives, aiming to appraise the urinary stream, urinary frequency, nocturia, and quality of life (QoL) illustrated in Figure 2. Due to its user-friendly and easily comprehensible nature, VPSS exhibits a notable edge over IPSS when it comes to evaluating LUTS, particularly in the context of elderly patients. Research conducted in Korean populations investigating LUTS and urethral stricture has substantiated that VPSS exhibits a significant correlation with IPSS, and a larger proportion of patients can complete it without requiring external assistance [4,13]. By employing visual representations, the VPSS aims to provide a more intuitive and user-friendly approach for evaluating LUTS in individuals with BPH. Furthermore; research conducted in Asian and African populations has consistently demonstrated that a higher proportion of patients are capable of completing the VPSS without the need for any assistance. The VPSS's intuitive format, which includes visual elements and simplified questions, contributes to its accessibility and facilitates a higher rate of self-completion among patients [2,13,14].

Urologists frequently rely on the IPSS for evaluating and monitoring patients with LUTS in their day-to-day practice. However, it is worth noting that patients with lower education levels may face challenges in accurately completing the IPSS questionnaire [2]. It is worth mentioning that while the IPSS provides a useful assessment of LUTS severity, it should be used in conjunction with other clinical evaluations, such as medical history, physical examination, and diagnostic tests, to ensure comprehensive management of patients with BPH. The IPSS questionnaire consists of seven questions related to LUTS, including incomplete bladder emptying, frequency, intermittency, urgency, weak urine stream, straining, and

nocturia. Each question is scored on a scale from 0 to 5, representing increasing symptom severity. The scores for each question are then added together to obtain a total IPSS score, ranging from 0 to 35. A higher score indicates more severe symptoms and a greater impact on daily life [13].

Studies have consistently demonstrated significant correlations in a number of domains of VPSS and IPSS in english language. The associations encompass the total scores of VPSS and IPSS, their scores related to QoL, scores pertaining to irritative symptoms, and scores regarding obstructive symptoms. These results show that the VPSS and IPSS give equivalent evaluations in these areas and capture similar elements of lower urinary tract symptoms [5,15]. However, in Tanzania previous research focused only on adopting the IPSS tool in the Swahili language but no efforts have been made to validate VPSS as a LUTS assessment tool for the local setting or attempt to perform a correlation study between VPSS and IPSS [16].

1.2 Problem Statement

The VPSS represents a novel approach designed to streamline the subjective evaluation of LUTS severity in men with BPH, addressing the obstacles linked to administering the IPSS. Various studies have been conducted to compare the VPSS and IPSS [3,5]. Nevertheless, in our context, there is limited research validating the VPSS for LUTS severity grading and no consensus on the most user-friendly tool for all patient types at Muhimbili National Hospital (MNH). Moreover, there is a paucity of research examining the efficacy of VPSS in longitudinal follow-up assessments of symptom severity dynamics and treatment effectiveness evaluations. Consequently, this study is aimed at conducting a comparative analysis of IPSS and VPSS systems in Tanzanian patients, specifically concerning the initial evaluation of LUTS and BPH, along with the appraisal of changes in symptom severity pre and post-treatment among patients attending the Department of Urology at MNH.

1.3 Rationale of the Study

Understanding the VPSS LUTS scoring will provide valuable insights into the merits of VPSS in assessing LUTS severity in BPH patients in terms of the rate of completing the tool as well as monitoring the symptom severity and treatment effectiveness. This knowledge is essential for healthcare professionals in making informed decisions regarding treatment strategies, monitoring patient progress, and improving overall patient care at MNH.

By conducting this study, we aimed to contribute to the existing body of literature by providing evidence-based insight into the correlation between the VPSS and IPSS in grading LUTS severity. The findings will guide healthcare professionals in assessing and monitoring LUTS in BPH patients, ultimately leading to improved patient outcomes and enhanced quality of care.

1.4 Conceptual Framework

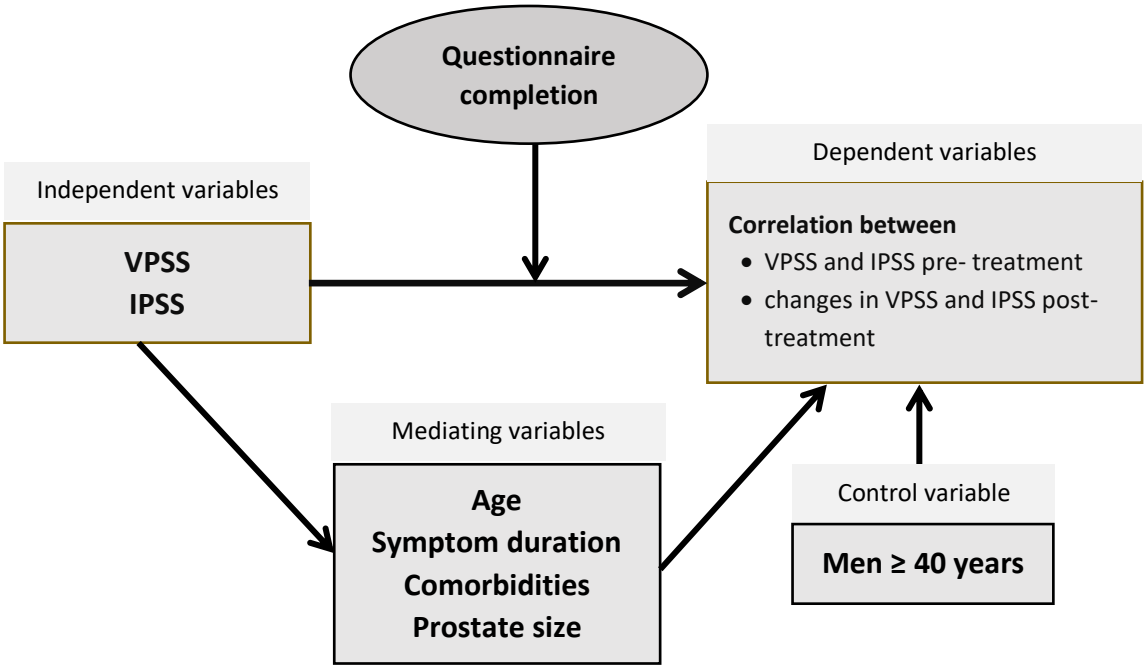


Figure 1: Conceptual framework illustrating the relationship between the variables

Source: Researcher's construct, MUHAS 2023.

The main components of the conceptual framework are as follows:

i. Independent Variables: VPSS, IPSS
ii. Dependent Variable: Correlation between VPSS and IPSS before treatment initiation and correlation between change in VPSS and IPSS post-treatment.
iii. Mediating Variables:
    a. Age: The age of the patients may influence their perception and reporting of urinary symptoms, which can affect the scores obtained from both VPSS and IPSS.
    b. Symptom Duration: The duration of LUTS experienced by patients may impact the accuracy and sensitivity of both scoring systems in capturing symptom severity changes over time.
    c. Comorbidities: The presence of other health conditions or medical issues that might interact with the assessment of LUTS using VPSS and IPSS.

d. Prostate size: The size of the prostate gland may influence the VPSS and IPSS scores especially when it grows in medial and cephalic direction.

1.5 Research question

Is there any correlation between the VPSS and IPSS in assessing the LUTS related to BPH at the Urology Department in MNH?

1.5.1 Specific Research Questions

i. What are the socio-demographic characteristics of patients presenting with LUTS related to BPH at MNH?
ii. What is the correlation between VPSS and IPSS assessment among patients with LUTS before treatment?
iii. What is the correlation between dynamics in VPSS and IPSS assessment after treatment?

1.6 Broad Objective

To assess the correlation between the VPSS and IPSS in assessing LUTS severity related to BPH at the Urology Department in MNH.

1.6.1 Specific Objectives

i. To determine the socio-demographic characteristics of patients presenting with LUTS related to BPH at MNH.
ii. To evaluate the correlation between VPSS and IPSS assessment among patients with LUTS before treatment.
iii. To evaluate the correlation between dynamics in VPSS and IPSS assessment post-treatment.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Socio-demographic characteristics of patients with LUTS related to BPH

Different studies indicate that age, symptom duration, and comorbidities can have significant effects on the VPSS and the IPSS assessments. A study conducted on the Indian population revealed that the combination of advanced age and low levels of literacy poses significant challenges in accurately assessing the symptoms of BPH [3]. Multiple studies have indicated that the majority of patients fell within the age range of 61 to 70 years. Furthermore, older patients may have age-related visual or cognitive impairments, potentially impacting their ability to comprehend and complete the questionnaires accurately according to studies performed in India, Korea, and Indonesia [2,3,13]. This may introduce bias in their responses and affect the comparability of VPSS and IPSS scores across different age groups. On the other hand, patients with larger prostate volumes are more likely to experience obstructive urinary symptoms, such as weak urinary stream and hesitancy, due to the mechanical obstruction caused by an enlarged prostate. Consequently, these patients may report higher scores on both VPSS and IPSS, reflecting more severe urinary symptoms. Following treatment the reduction in symptom severity may be less pronounced in patients with larger prostates, leading to less improvement in VPSS and IPSS scores compared to patients with smaller prostates [13].

The duration of LUTS experienced by patients has been found to influence VPSS and IPSS scores according to various studies. Patients with longer symptom duration may have developed coping mechanisms or adapted to their urinary symptoms over time, leading to potentially lower VPSS and IPSS scores. On the other hand, patients with more recent symptom onset may be more distressed by their symptoms, leading to higher scores on both questionnaires [12,13,17]. Therefore, the duration of symptoms should be considered while interpreting VPSS and IPSS scores to understand the true severity of LUTS in individual patients.

In the Indonesian study, over 50% of patients could read and had excellent local language comprehension. Educational backgrounds were comparable. Language-

proficient patients needed less assistance (<50%) with the IPSS questionnaire, while all non-language-proficient patients required support. Less than 20% versus 50% of participants needed support to complete the VPSS [17]. A similar study by Sanman et al. revealed that only a small portion of participants with higher education could complete the IPSS questionnaire independently, while over ninety percent of participants completed the VPSS questionnaire without support. This significant difference emphasizes an easy disparity between the two assessment tools. [18]. In a study among Nigerians, illiteracy significantly limited the use of the IPSS form, as many patients couldn't read English. This poses a challenge for healthcare professionals and researchers in populations with high illiteracy rates [14]. A similar study from Namibia highlights the potential benefits of the VPSS in terms of ease of use and comprehension, particularly for individuals with limited education [5]. Another study demonstrated that, the VPSS's visual format and simplified questioning approach may overcome language and literacy barriers, facilitating a more inclusive and accessible assessment of LUTS [13]. In a Tanzanian study validating the Swahili IPSS adaptation, both BPH patients and controls had similar educational levels, mostly at least secondary education. All participants completed the questionnaire independently, confirming its effectiveness as an assessment tool in a population with similar educational backgrounds and using their local language. However, the VPSS was not considered in this research [16].

In an Indian study, VPSS took an average of two minutes, while the IPSS, the gold standard tool took six minutes (IPSS usually takes 4-10 minutes, and VPSS 1-3 minutes) [18]. Likewise, a study conducted in Brazil revealed that the average time to complete the IPSS was 2.7 minutes (ranging from 1 to 5 minutes), while for the VPSS, it was 1.6 minutes (ranging from 0.5 to 3 minutes). Among patients with primary education, the mean time to complete the IPSS was 3 minutes, and for the VPSS, it was 1.7 minutes. In contrast, among patients with secondary education and above, the mean time to complete the IPSS was 2.4 minutes, and for the VPSS, it was 1.5 minutes [4].

A Chinese study discovered that the presence of comorbidities can interact with VPSS and IPSS scores. Patients with comorbidities, such as diabetes, hypertension, or cardiovascular diseases, may attribute some of their urinary symptoms to these conditions, resulting in lower scores on both questionnaires. In contrast, specific comorbidities, such as bladder or urethral disorders, may exacerbate urinary symptoms, leading to higher VPSS and IPSS scores [5]. The presence of comorbidities can complicate the interpretation of VPSS and IPSS scores, and clinicians/investigators should consider these factors while evaluating the severity of LUTS in patients with coexisting medical conditions [19].

2.2 Correlation between VPSS and IPSS assessment before treatment

According to Guzelsoy et al [6]., a statistically significant correlation was observed between the VPSS and IPSS in the study which was conducted in Turkey. Similarly, IPSS and VPSS were significantly positively correlated, according to Sanman et al [18]. Likewise, Wessels & Heyns in their study consistently demonstrated the interchangeability of the VPSS and IPSS in evaluating LUTS. Consequently, these assessment tools can be utilized interchangeably in clinical practice, further supporting their reliability and validity in capturing relevant symptomatology [20]. In their study, Selekman et al [21]., showed a substantial correlation between the VPSS and IPSS in terms of both the overall score and the specific criteria of frequency, nocturia, urgency, and QOL. Also, the VPSS and IPSS could be completed by the majority of the patients without assistance [6,22].

As suggested by studies a robust correlation is evident between the VPSS and the IPSS, suggesting their interchangeability in assessing LUTS, with one exception being the illiterate group. The VPSS serves as a user-friendly and easily comprehensible tool, making it a valuable auxiliary or alternative option alongside the IPSS for evaluation of LUTS across all levels of education [18,22]. A previous study involving men with LUTS revealed a noteworthy correlation between the overall VPSS and the total IPSS, as well as the VPSS QoL and IPSS QoL [12]. Furthermore, another study, which focused on men with urethral strictures, similarly exhibited a correlation between the overall VPSS and total IPSS scores [20].

2.3 Correlation between changes in VPSS and IPSS assessment after treatment

A study conducted in Korea displayed a meaningful correlation between the alteration in VPSS following treatment and the corresponding change in IPSS post-treatment. Their findings proposed that the VPSS holds the potential for assessing treatment effectiveness beyond the initial evaluation of LUTS. However, it's noteworthy that the correlation coefficient linking the post-treatment changes in VPSS and IPSS was comparatively lower than the correlation coefficient observed between VPSS and IPSS during the initial assessment. Consequently, a cautious interpretation of VPSS may be necessary when employing it to monitor treatment outcomes. They concluded that subsequent research may be imperative to reinforce these outcomes [13].

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study Design

This was a cross sectional study assessing the correlation between VPSS and IPSS in grading LUTS related to BPH at the Urology department in MNH from October 2023 to March 2024.

3.2 Study Area

Located in Dar es Salaam, Tanzania, MNH stands as the largest referral hospital in the country, providing comprehensive medical services and serving as the nation's premier training Centre for healthcare professionals. MNH takes pride in its diverse patient population, which includes individuals from various backgrounds with a wide range of medical conditions. This diversity creates an optimal setting for evaluating how well VPSS can replicate real-life situations and offers a comprehensive educational experience. The hospital collaborates with academic institutions including Muhimbili University of Health and Allied Sciences (MUHAS), as well as international students and researchers from universities on different continents. MNH has two campuses which are Upanga and Mloganzila. The Urology department has an average of 300 BPH outpatient visits per month.

3.3 Study Population

Both outpatients visiting the Urology clinic and MNH inpatients with LUTS constituted the population for this study.

3.4 Inclusion and exclusion criteria

3.4.1 Inclusion Criteria

Patients with BPH from the age of 40 and above who agreed to participate were included in the study.

3.4.2 Exclusion Criteria

Patients who had undergone surgical treatment for BPH or urethral stricture, those who had previously received medical treatment for BPH, patients with systemic neurological disease, patients with fixed pathological changes due to urinary Schistosomiasis, and those with a history of pelvic radiotherapy or diagnosed with neurogenic bladder were excluded from the study. Patients with visual problems were also excluded from the study.

3.5 Sample Size and Selection

3.5.1 Sampling strategy

Given the accessibility of patients at MNH, a consecutive sampling approach was employed. This involved selecting participants based on their availability and willingness to participate in the study.

3.5.2 Sample size estimation

Drawing from prior research, the computed effect size stood at 0.318. With a selected alpha error of 0.05 and a sought-after power level of 92%, the requisite minimum sample size was determined to be 113. Consequently, considering non-response, a comprehensive cohort of 124 patients was included in the study.

$$n = \frac{Z^2 P (1-P)}{d^2}$$

Where by:-

Z =1.96 (for 95 % confidence interval)

P = 92%. The proportion of patients with clinically significant LUTS [24].

d = Desired precision which is set at 5% (maximum likely error)

$$n = \frac{1.96^2 \times 0.92 (1- 0.92)}{0.05^2}$$

Sample size (n) =113, by adding a 10% non-response rate we get 124 respondents.

A total of 137 patients were available in the field during data collection surpassing the minimum sample size.

3.5 Study Variables

i. Independent Variables: VPSS and IPSS assessment based on standardized tools.
ii. Dependent Variable: Correlation between VPSS and IPSS before treatment initiation and correlation between changes in VPSS and IPSS post-treatment initiation.
iii. Mediating Variables:
    a. Age: The age of the patients may influence their perception and reporting of urinary symptoms, which can affect the scores obtained from both VPSS and IPSS.
    b. Symptom Duration: The duration of LUTS experienced by patients may impact the accuracy and sensitivity of both scoring systems in capturing symptom severity changes over time.
    c. Comorbidities: The presence of other health conditions or medical issues might interact with the assessment of LUTS using VPSS and IPSS, for example, diabetes mellitus.

3.6 Data Collection Methods

Patients were asked to complete the Swahili version of the IPSS questionnaire, which comprises 7 questions (Annexed). These questions include Q1, which assesses incomplete emptying; Q2, which evaluates frequency; Q3, which measures intermittency; Q4, which examines urgency; Q5, which assesses weak stream; Q6, which evaluates straining; and Q7, which examines nocturia. The IPSS total score is the summation of all 7 questions. Additionally, the sum of Q2, Q4, and Q7 is used to evaluate irritative symptoms, while the sum of Q1, Q3, Q5, and Q6 is used to assess obstructive symptoms. Q8 is a question related to the QoL of patients concerning their urinary symptoms. By completing this questionnaire, patients' urinary symptoms and their impact on their daily life can be evaluated.

The patients were also asked to complete the VPSS questionnaire, which comprises 4 pictograms designed to assess specific domains. These domains include Q1, which evaluates the day frequency of urination; Q2, which assesses nocturia; Q3, which measures the strength of the urine stream; and Q4, which examines the QoL. The scores obtained from Q1 and Q2 are used to evaluate irritative symptoms, while Q3 represents obstructive symptoms. By completing the VPSS questionnaire, patients' urinary symptoms in terms of frequency, nocturia, urinary stream force, and their impact on their quality of life can be assessed using pictorial representations as illustrated in Figure 2.

The data was collected before treatment initiation and the patients were followed up for the duration of three months, then they were reassessed for their LUTS to compare the correlation before and after treatment initiation. The treatment given were dependent on their symptoms severity as graded by VPSS and IPSS where by those patients who had mild symptoms were advised on life-style modifications, those with moderate symptoms were put on medical therapy and those who had severe symptoms underwent either TURP or simple open prostatectomy depending on their size of prostate gland.

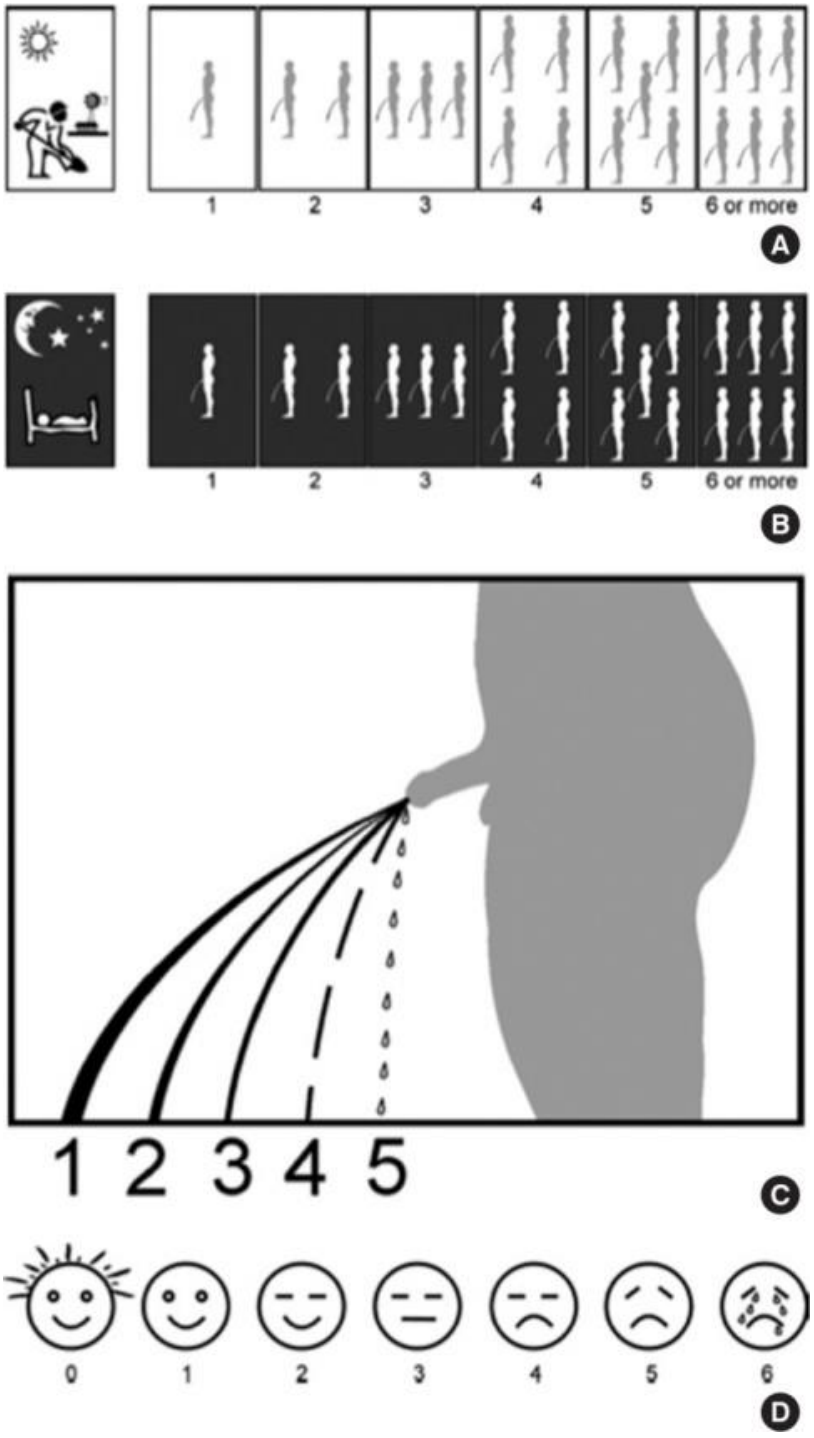


Figure 2: VPSS comprised of a pictogram to evaluate (A) frequency, (B) nocturia, (C) strength of the urine stream, and (D) QoL.

3.6.1 Recruitment and Training of Research Assistants

In the data collection exercise, two assistants with clinical area background and research skills were recruited for the research work. The principal investigator, who was also overseeing them during the data collection period, provided training regarding the aim of the study and the protocols to be followed during data collection. The research assistants received two days of training on the data collection tool as well as ethical considerations in research.

3.7 Investigation tools, validity, and reliability

The test for investigation tool, their validity, and reliability was conducted with sample patients from MNH Urology in and outpatients. A preliminary evaluation of the checklist was conducted with 10 men aged 40 years and older to assess its accuracy and internal consistency. The responses obtained during the pilot test will provide practical insights into the level of accuracy and internal consistency of the questions.

3.8 Data processing and analysis

3.8.1 Data Management

The gathered data was inputted into Microsoft Excel for subsequent data processing. To ensure the completeness and accuracy of the collected data, quality control checks were conducted before proceeding with the analysis.

3.8.2 Data Analysis

Statistical computations were conducted utilizing SPSS version 27. Instances with a significance level of $p<0.05$ were deemed as statistically significant.

Objective I

The analysis involved descriptive statistics to determine the patient's socio-demographic characteristics. This included calculating the mean, median, and standard deviation. Common comorbidities were identified and their prevalence was analyzed within the patient population. Subgroup analyses were conducted based on demographic variables to explore potential differences in characteristics.

Objective II and III

Spearman correlation coefficient was used to calculate the correlation coefficient between VPSS and IPSS scores before and following treatment. A significance level of $p < 0.05$ was considered statistically significant.

3.9 Ethical issues

Ethical clearance was obtained from the MUHAS Institutional Review Board (IRB) to ensure its approval. Furthermore, the researcher obtained the necessary permissions and clearances from the pertinent authorities at MNH to collect the required data. Permission was also sought from Aga Khan for validate Swahili IPSS and VPSS from the primary firm. The patients were asked for their permission to voluntarily participate in the study and an informed consent (annexed) was obtained from those patients who were willing to participate in the study. To ensure data privacy, no patient names were recorded. The collected data was kept confidential. No conflicts of interest existed, and ethical standards were followed throughout. The research was conducted with integrity and transparency. Participants received verbal information and joined voluntarily without adverse consequences. Written consent was required for participation, and all data was securely stored.

CHAPTER FOUR

4.0 ANALYSIS AND RESULT PRESENTATION

4.1 Patients' characteristics

In this study involving 137 patients with irritative and obstructive LUTS, the characteristics of the patients reveal a median age of 70.0 years (62.0-76.0). The median duration of symptoms was 22.0 months (8.0-48.0). Before treatment, the median prostate volume was 49.0 mL (34.5-70.0), which decreased to 35.0 mL (24.0-55.0) after treatment. The education level distribution shows that 10 (7.3%) had no formal education, 67 (48.9%) had a primary level, 36 (26.3%) had a secondary level, and 24 (17.5%) had college/university education. Additionally, 129 (94.2%) patients could read and understand Swahili. See *Table 1* below. Three patients died during follow-up. Interpretation of symptom scores using the IPSS and VPSS indicates significant improvements after treatment across all domains, with a mean IPSS score of 23.55 ±7.15 (4-35) before treatment, and 16.2±7.74 (1-35) after treatment; mean VPSS score of 12.3±3.18 (3-17) before treatment and 8.9±2.8 (4-24) after treatment. The mean IPSS QoL score was 4.1±0.9 (2-5) and improved to 2.9±1.79 (0-20) after treatment, while the mean VPSS QoL score was 4.3±1.4 (0-6) and improved to 2.7±1.56 (0-16).

4.1.1 Patient Characteristics in Completing IPSS and VPSS

In the analysis of age groups, there was no statistically significant difference observed in the completion of IPSS with assistance between patients aged ≤70 years and those aged >70 years (p=0.686). Similarly, no significant difference was found in completing VPSS with assistance (p=0.671). Regarding education levels, there was no significant discrepancy in IPSS completion among patients with different educational backgrounds (p=0.245). Similarly, for VPSS completion, no significant differences were observed across educational levels (p=0.926). However, when considering the ability to read Swahili, a statistically significant difference was evident between VPSS and IPSS. Patients who could read displayed a statistically significant difference in completing IPSS (p=0.042), while no significant

difference was observed in completing VPSS (p=0.999). Results have been demonstrated in *Table 2* below.

Table 1: Characteristics of patients with LUTS assessed using IPSS and VPSS, N=137

Characteristic	Value
Age (years),	70.0 (62.0-76.0)
Duration of symptoms (months)	22.0(8.0-48.0)
Prostate volume (mL)	
Before treatment	49.0(34.5-70.0)
After treatment	35.0(24.0-55.0)
Education level (%)	
No formal education	10 (7.3)
Primary level	67 (48.9)
Secondary level	36 (26.3)
College/University	24 (17.5)
Ability to read and understand Swahili (%)	
Yes	129 (94.2)
No	8 (5.8)
IPSS*	
Total	24.0(19.0-29.0)
Obstructive symptoms	3.5(1.0-5.0)
Irritative symptoms	4.3(2.0-5.0)
Quality of life	4.0(3.0-5.0)
VPSS*	
Total	13.0(10.0-17.0)
Obstructive symptoms	4.0(3.0-4.0)
Irritative symptoms	5.0(3.0-6.0)
Quality of life	5.0(3.0-6.0)

Values in this table are displayed as median (interquartile range) or number (%).
*IPSS, International Prostate Symptom Score;
*VPSS, Visual Prostate Symptom Score.

Table 2: Patients' characteristics in completing assessment using IPSS and VPSS

Variable	IPSS with assistance		p-value	VPSS with assistance		p-value
	Yes (%)	No (%)		Yes (%)	No (%)	
Age			0.686			0.671
≤70 years	20 (27.0)	54 (73.0)		10 (13.5)	64 (86.5)	
>70 years	19 (30.2)	44 (69.8)		7 (11.1)	56 (88.9)	
Level of educations			0.245			0.926
No formal education	5 (50.0)	5 (50.0)		0 (0.0)	10 (100.0)	
Primary level	21 (31.3)	46 (68.7)		8 (11.9)	59 (88.1)	
Secondary level	9 (25.0)	27 (75.0)		6 (16.7)	30 (83.3)	
College/University	4 (16.7)	20 (83.3)		3 (12.5)	21 (87.5)	
Ability to read (English/Swahili)			**0.042**			0.999
Yes	34 (26.4)	95 (73.6)		17 (13.2)	112 (86.8)	
No	7 (87.5)	1 (12.5)		0 (0.0)	8 (100.0)	
Total	39 (28.5)	98 (71.5)		17 (12.4)	120 (87.6)	

Values are displayed as numbers (percent).
IPSS, International Prostate Symptom Score.
VPSS, Visual Prostate Symptom Score.
Bold p-value means statistically significant

4.2 Correlation between IPSS and VPSS before treatment

The Spearman correlation coefficients between VPSS and IPSS before treatment revealed significant positive correlations across all domains. Specifically, for total scores, there is a strong positive correlation of 0.648 ($p<0.001$). Subcomponents of obstructive and irritative LUTS also show significant positive correlations with VPSS total scores, with coefficients ranging from 0.510 to 0.630 (all $p<0.001$). Moreover, quality of life scores from both VPSS and IPSS demonstrate a positive correlation of 0.705 ($p<0.001$). See *Table 3* below.

Table 3: Spearman correlation between IPSS and VPSS before treatment

	VPSS			
	Total	**Obstructive LUTS**	**Irritative LUTS**	**Quality of Life**
IPSS				
Total	0.648 (<0.001)	0.510 (<0.001)	0.615 (<0.001)	0.242 (0.004)
Obstructive LUTS	0.573 (<0.001)	0.533 (<0.001)	0.519 (<0.001)	0.150 (0.081)
Irritative LUTS	0.631 (<0.001)	0.386 (<0.001)	0.630 (<0.001)	0.299 (<0.001)
Quality of life	0.390 (<0.001)	0.271 (0.001)	0.341 (<0.001)	0.705 (0.001)

The data is displayed as a correlation coefficient (P-value).

IPSS; International Prostate Symptom Score.

VPSS; Visual Prostate Symptom Score.

4.3 Correlation between IPSS and VPSS after treatment

The Spearman correlation coefficients between changes in VPSS and IPSS after treatment demonstrate significant positive correlations across all domains. Specifically, for total scores, there is a strong positive correlation of 0.732 ($p<0.001$). Subcomponents of obstructive and irritative LUTS also show significant positive correlations with VPSS total scores, with coefficients ranging from 0.505 to 0.774 (all $p<0.001$). Moreover, quality of life scores from both VPSS and IPSS demonstrate a positive correlation of 0.774 ($p<0.001$). The results show a strong correlation between VPSS and IPSS scores, confirming their validity in assessing LUTS severity and improvement after treatment. See

*Table **4*** below.

Table 4: Spearman correlations reflecting the relationship between changes in VPSS and IPSS following treatment

	VPSS			
	Total	Obstructive LUTS	Irritative LUTS	Quality of Life
IPSS				
Total	0.732 (<0.001)	0.505 (<0.001)	0.750 (<0.001)	0.719 (<0.001)
Obstructive LUTS	0.623 (<0.001)	0.448 (<0.001)	0.642 (<0.001)	0.643 (<0.001)
Irritative LUTS	0.735 (<0.001)	0.456 (<0.001)	0.774 (<0.001)	0.675 (<0.001)
Quality of life	0.632 (<0.001)	0.460 (<0.001)	0.643 (<0.001)	0.774 (<0.001)

The data is displayed as a correlation coefficient (P-value).

IPSS; International Prostate Symptom Score.

VPSS; Visual Prostate Symptom Score.

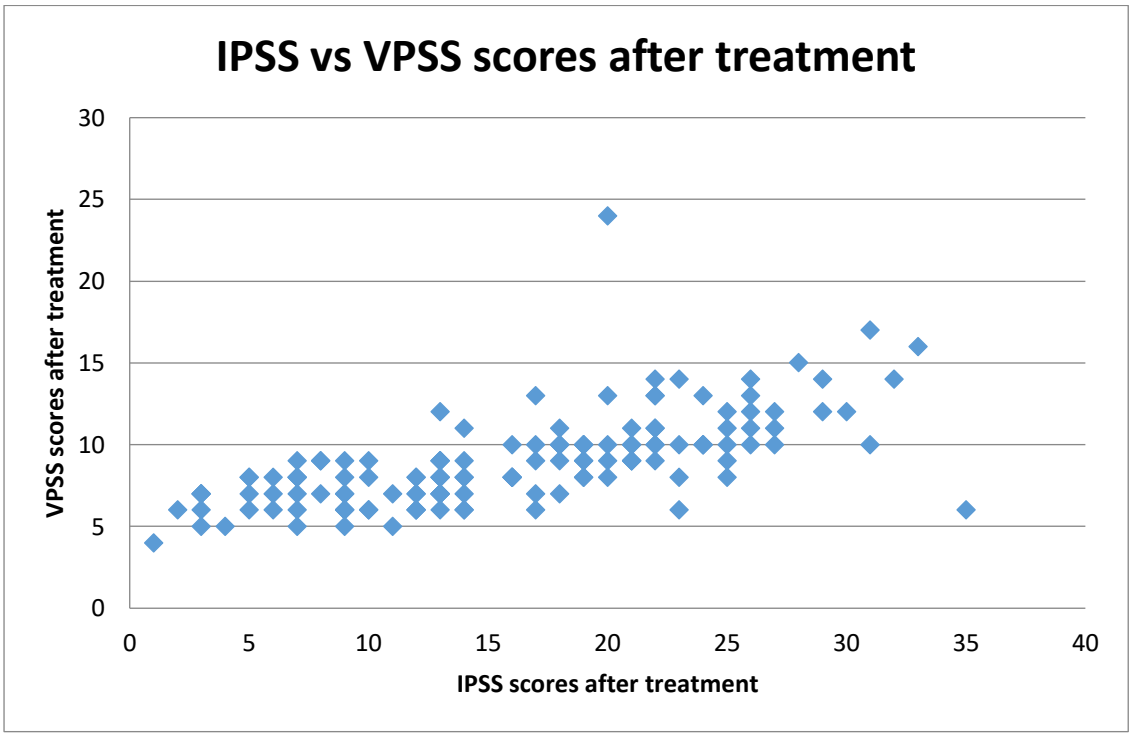


Figure 3: IPSS vs VPSS score scatter plot

A correlation coefficient of 0.658 between IPSS and VPSS suggests a strong positive linear relationship between these two variables. In simpler terms, as IPSS scores increase, VPSS scores also tend to increase, and vice versa. This correlation coefficient indicates that approximately 65.8% of the variability in VPSS scores can be explained by the variability in IPSS scores. Therefore, individuals with higher IPSS scores are likely to have higher VPSS scores, indicating more severe LUTS according to both assessment tools. Conversely, individuals with lower IPSS scores are likely to have lower VPSS scores, suggesting less severe LUTS.

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

In this research, we aimed to assess the relationship between VPSS and IPSS within a cultural and study context that had not been explored previously, particularly in Tanzania. Additionally, we aimed to analyze variations in IPSS and VPSS following treatment. Our findings indicate a notable correlation between VPSS and IPSS among the Tanzanian population studied. Importantly, the observed correlation between changes in VPSS and changes in IPSS after treatment highlights the comparability of these two assessment systems in terms of their clinical effectiveness.

5.2 Patients' Demographics Presentations

In this study involving 137 patients with irritative and obstructive LUTS, our findings reveal a predominantly older patient population with a median age of 70.0 years, correlating with similar studies by Park and Lee and Guzelsoy et al [6,13]. Despite variations in median prostate volume across studies, our findings demonstrate a significant reduction post-treatment, indicating effective symptom management. Education levels primarily at the primary level in our cohort align with Guzelsoy et al [6] observations. The significant improvements in IPSS and VPSS scores post-treatment underscore the efficacy of the intervention in alleviating LUTS symptoms. However, the influence of symptom duration on baseline scores and treatment response warrants consideration, as noted in the literature [4,6,12,17]. Moreover, our study echoes the importance of utilizing accessible assessment tools like VPSS, particularly in populations with limited education or language proficiency, a notion supported by various studies.

Understanding the impact of comorbidities on symptom evaluation and treatment outcomes is crucial for clinicians, emphasizing the need for a comprehensive approach to patient care. Overall, our findings contribute to the growing body of literature on LUTS management, highlighting the importance of patient demographics, symptom severity, and treatment accessibility in optimizing clinical outcomes.

5.3 Patient Characteristics in Completing IPSS and VPSS

Regarding patients' characteristics in completing IPSS and VPSS, findings from our study revealed no statistically significant difference in the completion rates of both tools with assistance among age groups and across different educational backgrounds, consistent with similar observations in the study by Guzelsoy et al [6]. Specifically, in our study, the p-values for completion of IPSS with assistance were 0.686 for age groups and 0.245 for educational levels, while for VPSS, they were 0.671 and 0.926, respectively. However, a notable distinction emerged concerning the ability to read English/Swahili, with statistically significant differences observed in completing IPSS ($p=0.042$) but not VPSS ($p=0.999$). This underscores the impact of literacy on completing IPSS but suggests that demographic factors such as age and education level may not significantly affect completion rates for both tools. These findings align with the broader literature, including studies by van der Walt et al [12], Wessels et al [20]., and Park and Lee [13], which demonstrate significant correlations between VPSS and IPSS scores. For instance, van der Walt reported a correlation coefficient of 0.6227 ($P<0.001$) between total VPSS and total IPSS, while Wessels et al. demonstrated a correlation coefficient of 0.845 ($P<0.001$) [12,20].

Additionally, the study by Park and Lee provided Spearman correlation coefficients between VPSS and IPSS scores, indicating significant associations across various domains [13]. Furthermore, the study by Roy et al [3] supports the notion that VPSS may be easier for patients to complete compared to IPSS, with 83% of patients able to fill the VPSS questionnaire without assistance compared to 40% for IPSS ($Z = 6.557$, $P < 0.001$). This finding correlates with the findings from our study, providing

further evidence regarding the accessibility and effectiveness of VPSS in assessing LUTS. Overall, these findings demonstrate the importance of considering literacy and the comparative effectiveness of assessment tools in optimizing patient-centered care for individuals with LUTS.

5.4 Correlation of Assessment tools after treatment

In our study, Spearman correlation coefficients between VPSS and IPSS before treatment revealed significant positive correlations across all domains, indicating a consistent relationship between the two symptom assessment tools. Specifically, the strong positive correlation of 0.648 ($p<0.001$) for total scores suggests that higher VPSS scores are associated with higher IPSS scores, highlighting their concurrent validity in assessing LUTS severity. Furthermore, subcomponents of obstructive and irritative LUTS also showed significant positive correlations with VPSS total scores, with coefficients ranging from 0.510 to 0.630 (all $p<0.001$). Moreover, quality of life scores from both VPSS and IPSS demonstrated a positive correlation of 0.705 ($p<0.001$), indicating consistency in evaluating the impact of LUTS on patients' quality of life. These findings highlights the reliability and validity of VPSS as a complementary tool to IPSS in assessing LUTS severity and its impact on patients' quality of life. Correlating this with other studies [2,13,24], Spearman correlations between changes in VPSS and IPSS after treatment demonstrate consistent associations. The positive correlations between changes in VPSS and IPSS across various domains, such as total scores, obstructive symptoms, irritative symptoms, and quality of life, further validate the relationship between these two assessment tools in capturing treatment response. For instance, changes in VPSS total scores exhibited a significant positive correlation of 0.364 ($p<0.001$) with changes in IPSS total scores, indicating that improvements in VPSS scores are associated with improvements in IPSS scores after treatment. This consistency in correlations between VPSS and IPSS both before and after treatment reaffirms the concurrent validity and reliability of VPSS as a valuable tool in assessing and monitoring LUTS severity and treatment response.

CHAPTER SIX
6.0 CONCLUSION, LIMITATIONS AND RECOMMENDATION

6.1 Limitations

Limitations from this study could be mentioned as follows;

- Firstly, the inclusion of data from a single institution may introduce a potential selection bias, limiting the generalizability of our findings.
- Additionally, comparisons between VPSS and IPSS did not account for variations in the educational and sociodemographic background of enrolled patients, which could affect the interpretation of results.
- Furthermore, while our study is the first to elucidate an association between VPSS and IPSS in different study groups and to investigate the relationship between changes in VPSS and changes in IPSS after treatment, several other factors were not addressed. For instance, we did not assess the impact of comorbidities or concomitant medications on VPSS and IPSS scores, which could influence symptom severity and treatment response.

6.2 Conclusion

This is the first Tanzanian study to explore the correlation between changes in VPSS and IPSS scores before and after treatment. The findings reveal a significant correlation between changes in VPSS and IPSS scores, highlighting VPSS's potential utility in assessing treatment efficacy beyond initial LUTS evaluation. Additionally, more respondents completed the VPSS questionnaire unassisted, suggesting advantages of its visual format and intuitive questions. Overall, the study supports using VPSS alongside IPSS to enhance the comprehensive evaluation of LUTS severity and treatment outcomes.

6.3 Recommendation

In our clinical setting where many patients are elders aged 70 years and above, many with cognitive problems and low literacy, the VPSS serves as a user-friendly and easily comprehensible tool, making it a valuable auxiliary or alternative option alongside the IPSS for evaluation of LUTS.

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APPENDICES

Appendix IA: Consent Form (English version)

Title: **The Correlation between Visual Prostate Symptom Score and the International Prostate Symptom Score in grading Lower Urinary Tract Symptoms at Muhimbili National Hospital**

Dear

……

You are invited to participate in a research study conducted at Muhimbili National Hospital to assess the correlation between the Visual Prostate Symptom Score (VPSS) and the International Prostate Symptom Score (IPSS) in grading Lower Urinary Tract Symptoms (LUTS). We kindly request your voluntary participation in this study.

Study Purpose: This study aims to determine whether there is a correlation between VPSS and the IPSS in grading of LUTS. By participating in this research, you will contribute to the advancement of knowledge in the field of urology and help improve the assessment and management of LUTS.

Study Procedures: If you agree to participate, the following procedures will take place:

Completion of VPSS and IPSS Questionnaires: You will be asked to complete both the VPSS and IPSS questionnaires. These questionnaires will inquire about your urinary symptoms, their severity, and their impact on your daily life.

Data Collection: The information provided in the questionnaires will be collected and recorded for research purposes.

Confidentiality: Your participation in this study will be treated with strict confidentiality. All data collected will be anonymous, and your identity will be kept confidential.

Benefits of Participation: While there may be no direct benefits to you, your participation will help contribute to scientific knowledge and may potentially lead to improvements in the assessment and treatment of LUTS for future patients.

Risks: The questionnaires used in this study are well-established and have been used in various research settings. The main risk associated with this study is the potential for slight discomfort or inconvenience when answering questions about your urinary symptoms. However, the risk is minimal, and you may skip any question that you feel uncomfortable answering.

Voluntary Participation: Participation in this study is entirely voluntary, and you have the right to withdraw your consent at any time without any penalty or negative consequences. Your decision to participate or not will not affect your medical care or relationship with Muhimbili National Hospital.

Contact Information: If you have any questions or concerns about the study or your participation, please feel free to contact the **Director of Research, Publications and Innovations, MUHAS: Dr. Nahya Salim +255 713 250 074**.

Consent to Participate: I have read and understood the information provided in this Informed Consent Form. I willingly agree to participate in the study titled “The correlation between Visual Prostate Symptom Score and the International Prostate Symptom Score in grading Lower Urinary Tract Symptoms at Muhimbili National Hospital.”

I understand that my participation is entirely voluntary, and I have the right to withdraw my consent at any time without any negative consequences.

Participant’s Signature: _____ Date: _____

Researcher’s Signature: _____ Date: _____

I confirm that I have provided all necessary information to the participant, and they have given informed consent voluntarily to participate in the study.

Researcher’s Name: _____ Date: _____

appendix IB: Consent Form (Swahili version)
Fomu ya Idhini

Utafiti kuhusu uwiano kati ya alama ya dalili za tezi dume inayoonekana kwa picha na alama ya kimataifa ya dalili za tezi dume kwenye kutathmini dalili za njia ya mkojo kwa wagonjwa katika hospitali ya taifa Muhimbili;

Ndugu……

Unakaribishwa kushiriki katika utafiti unaofanywa katika hospitali ya taifa Muhimbili ili kutathmini dalili za tezi dume kwa wagonjwa kwa kuangalia uwiano kati ya alama ya picha (VPSS) na alama ya kimataifa ya dalili za tezi dume (IPSS). Tunaomba ushiriki wako wa hiari katika utafiti huu.

Kusudi la utafiti; Lengo la utafiti huu ni kubaini kama kuna uwiano kati ya alama ya picha kwa dalili za tezi dume (VPSS) na alama ya kimataifa ya dalili za tezi dume (IPSS) katika tathmini ya kimatibabu kwa ajili ya dalili za kushindwa kukojoa. Kwa kushiriki katika utafiti huu, utachangia maendeleo ya ujuzi katika fani ya Urolojia na kusaidia kuboresha tathmini na usimamizi wa dalili za chini za mkojo.

Ikiwa unakubali kushiriki, taratibu zifuatazo zitafanyika; Utaombwa kujaza dodoso la VPSS na IPSS: Dodoso hizi zitauliza kuhusu dalili zako za mkojo, ukali wao na athari ya hizo dalili katika maisha yako ya kila siku.

Ukusanyaji wa data: Taarifa zilizotolewa katika dodoso zitakusanywa na kurekodiwa kwa madhumuni ya utafiti.

Usiri: Kushiriki kwako katika utafiti huu utabaki kuwa siri. Taarifa yote itakayokusanywa itakuwa ya siri na utambulisho wako utawekwa kwa siri.

Manufaa ya kushiriki: Ingawa kunaweza kusiwe na manufaa ya moja kwa moja kwako, ushiriki wako utasaidia kuchangia maarifa ya kisayansi na huenda ukasababisha maboresho katika tathmini na matibabu ya dalili za mkojo zinazosababishwa na tezi dume kwa wagonjwa wa siku zijazo.

Athari: Dodoso zitakazotumika katika utafiti huu zimethibitishwa vyema na zimetumika katika mazingira mbalimbali ya kitafiti. Athari kuu inayohusishwa na

utafiti huu ni uwzekano wa kupata usumbufu wakati wa kujibu maswali kuhusu dalili zako za mkojo. Hata hivyo athari hii ni ndogo na unaweza kuruka swali lolote ambalo huhisi vizuri kujibu.

Ushiriki wa hiari: Kushiriki katika utafiti huu ni kwa hiari kabisa, na una haki ya kuondoa kibali chako wakati wowote. Uamuzi wako wa kushiriki au kutoshiriki hautaathiri huduma yako ya matibabu au uhusiano na hopsitali ya taifa Muhimbili.

Mawasiliano: Ikiwa una swali au wasiwasi wowote kuhusu utafiti au ushiriki wako, tafadhali jisikie huru kuwasiliana na; **Dr. Nahya Salim, Mkrugenzi wa tafiti wa Chuo kikuu cha Afya na Sayansi Shirikishi, Muhas; Namba ya simu:** +255 713 250 074.

Idhini ya kushiriki: Nimesoma na kuelewa maelezo yaliyotolewa katika fomu hii ya kibali kwa taarifa zangu. Ninakubali kushiriki katika utafiti huu kwa ajili ya kubaini kama kuna uwiano kati ya alama ya picha kwa dalili za tezi dume (VPSS) na alama ya kimataifa ya dalili za tezi dume (IPSS) katika tathmini ya kimatibabu kwa ajili ya dalili za kushindwa kukojoa. Ninaelewa kuwa ushiriki wangu ni wa hiari kabisa, na nina haki ya kuondoa idhini yangu wakati wowote bila matokeo yoyote mabaya.

Sahihi ya mshiriki: ……

Tarehe; ……

Ninathibitisha kwamba nimetoa taarifa zote muhimu kwa mshiriki, na wametoa kibali cha kushiriki kwa hiari katika utafiti huu.

Jina la Mtafiti: ……

Tarehe; ……

Appendix IIA: Questionnaire (English)

The correlation between Visual Prostate Symptom Score and the International Prostate Symptom Score in grading Lower Urinary Tract Symptoms at Muhimbili National Hospital

Introduction: Thank you for participating in our research study. Your valuable input will contribute to this study which is looking to evaluate if there is a correlation between Visual Prostate Symptom Score (VPSS) and the International Prostate Symptom Score (IPSS) in grading Lower Urinary Tract Symptoms (LUTS) at Muhimbili National Hospital.

Please answer the following questions honestly and to the best of your ability. Your responses will be kept confidential and used for research purposes only.

Section 1: Participant Information

1. Age: _____ years
2. Gender: Male/Female
3. Other medical condition such as Hypertension, Diabetes Mellitus, other
4. Education Level: Illiterate/Literate (Please specify the highest level of education completed:
    a. None
    b. Primary
    c. Secondary
    d. High School
    e. University

Section 2: Urinary Symptoms

For each of the following urinary symptoms, please indicate the severity experienced over the past month using the VPSS and the IPSS: markdown

VPSS ☐ IPSS ☐

Symptom	None	1	2	3	4	5
1. Incomplete emptying of the bladder						
2. Frequency of urination						
3. Intermittency of urine flow						
4. Urgency of urination						
5. Weak urine stream						
6. Straining to urinate						
7. Nocturia						

Section 3: User-Friendliness

Please rate the user-friendliness of each assessment tool:

Tool	**Very difficulty**	**Difficulty**	**Neutral**	**Easy**	**Very easy**
VPSS					
IPSS					

Section 4: Additional Feedback

Do you have any additional comments or feedback regarding the VPSS and IPSS assessment tools?

Please provide any suggestions for improvement.

Section 5: Consent to Participate (Optional)

Would you be willing to participate in follow-up interviews to further discuss your experiences with the VPSS and IPSS assessment tools? (Yes/No)

Thank you for participating in our study. Your cooperation is greatly appreciated.

Participant's signature: _____ Date: _____

Appendix IIB: Swahili Questionnaire

DODOSO

Uwiano kati ya alama ya picha kwenye dalili za mkojo za tezi dume ikilinganishwa na alama ya kimataifa kwa ajili ya dalili za tezi dume katika hospitali ya taifa ya Muhimbili.

Utangulizi: Asante kwa kushiriki katika utafiti wetu. Maoni yako muhimu yatachangia tathmini ya ufanisi katika tafiti hii.

Tafadhali jibu maswali yafuatayo kwa uaminifu na kwa uwezo wako wote. Majibu yako yatakuwa ya siri na kutumika kwa madhumuni ya utafiti pekee.

Sehemu ya 1: Taarifa za mshiriki

1. Umri: Miaka……
2. Jinsia: Mwanaume/Mwanamke
3. Kiwango cha elimu: Hajui kusoma na kuandika
   Tafadhali taja kiwango cha juu cha elimu;
   a. Hakuna
   b. Msingi
   c. Sekondari
   d. Kidato cha sita
   e. Chuo kikuu

Sehemu ya 2: Dalili za mkojo

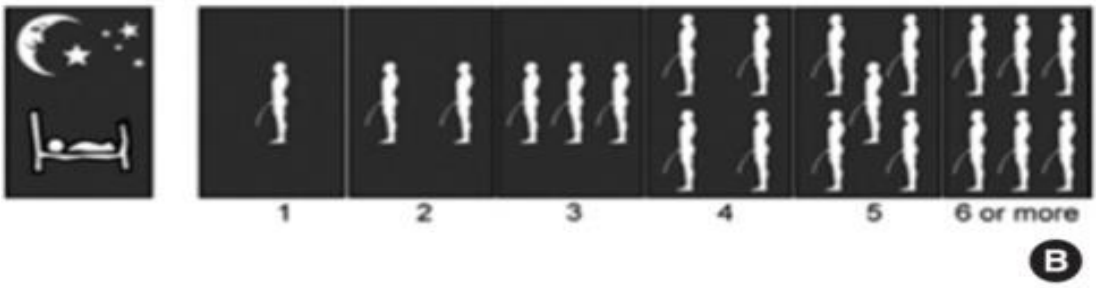
Kwa kila moja ya dalili zifuatazoza mkojo, tafadhali onyesha ukali uliopatikana katika mwezi uliopita kwa kutumia VPSS na IPSS:

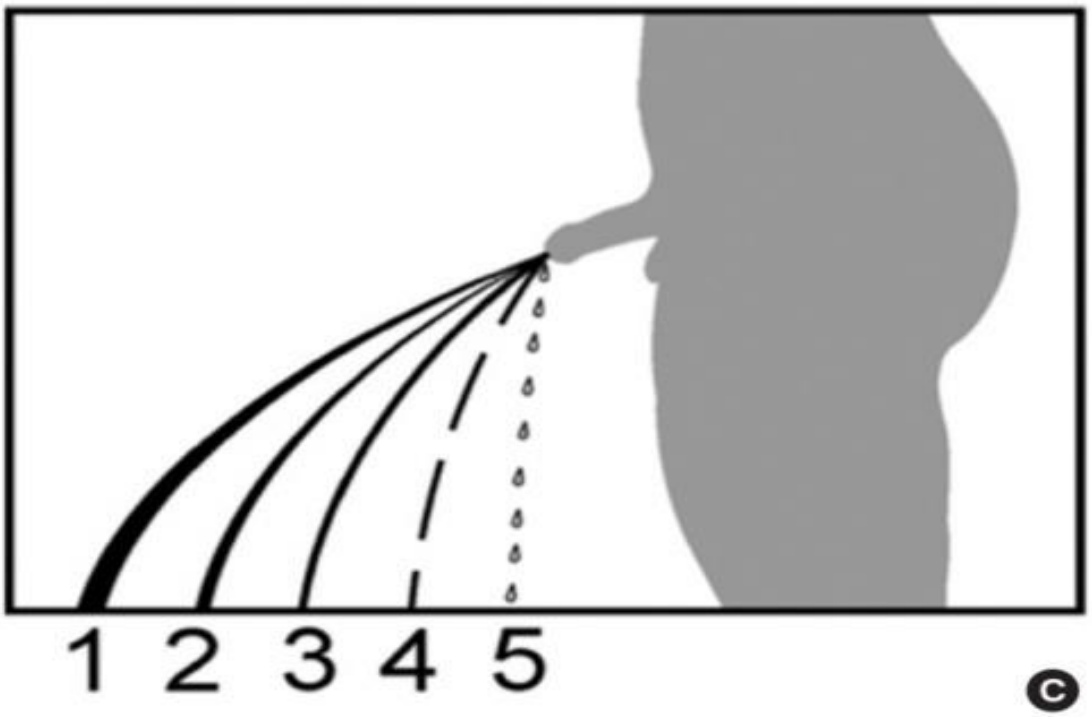
IPSS ☐

Dalili	Hakuna	1	2	3	4	5
1. Mkojo kubaki kwenye kibofu						
2. Mara ngapi ulienda kukojoa wakati wa mchana						
3. Kushindwa na kuanza tena kukojoa						
4. Kushindwa kuahirisha kukojoa						
5. Mkondo dhaifu wa mkojo						
6. Mara ngapi umeamka usiku ili kukojoa						
7. Mara ngapi umeamka usiku ili kukojoa						

VPSS ☐









Sehemu ya 3; Urahisi wa utumiaji

Tafadhali kadiria urahisi wa utumiaji wa kila zana ya tathmini:

Dodoso	Ngumu sana	Ngumu kiasi	Kawaida	Rahisi	Rahisi sana
VPSS					
IPSS					

Sehemu ya 4: Maoni ya ziada

Je, una maoni yoyote ya ziada au maoni kuhusu zana za tathmini za VPSS na IPSS?

Tafadhali toa mapendekezo yoyote ya kuboresha.

……

Sehemu ya 5; Idhini ya kushiriki (Si lazima)

Je, ungependa kushiriki katika mahojiano ya ufuatiliaji ili kujadili Zaidi uzoefu wako na zana za tathmini za VPSS na IPSS? (Ndio/Hapana)

Asante kwa kushiriki katika utafiti wetu. Ushirikiano wenu unathaminiwa sana.

Sahihi ya mshiriki: ……..

Tarehe: ……..

Appendix IIIA: International Prostate Symptom Score (English Version)

Royal United Hospitals Bath NHS
NHS Foundation Trust

International prostate symptom score (IPSS)

What is the IPSS score?

The IPSS questionnaire allows your urologist to better understand the severity of your water work symptoms. It is used for men who are having problems that are likely to be related to an enlarged prostate. It is helpful in determining which treatment option is best for you and then monitoring any improvement.

What does it involve?

There are 7 questions relating to different symptoms you might be experiencing and one question relating to your overall quality of life. Once you have scored each question the values are added together to give an indication of the severity of your symptoms.

Please complete the form and bring it with you to your outpatient appointment.

Royal United Hospitals Bath NHS Foundation Trust
Combe Park, Bath BA1 3NG
01225 428331 www.ruh.nhs.uk

Please contact the Patient Advice and Liaison Service (PALS) if you require this leaflet in a different format, or would like to feedback your experience of the hospital. Telephone 01225 825656 or Email ruh-tr.PatientAdviceandLiaisonService@nhs.net

IPSS

Name: **Date:**

	Not at all	Less than 1 time in 5	Less than half 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 finish urinating?	0	1	2	3	4	5	
Frequency Over the past month, how often have you had to urinate again less than two 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 last month, how difficult have you found it 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	

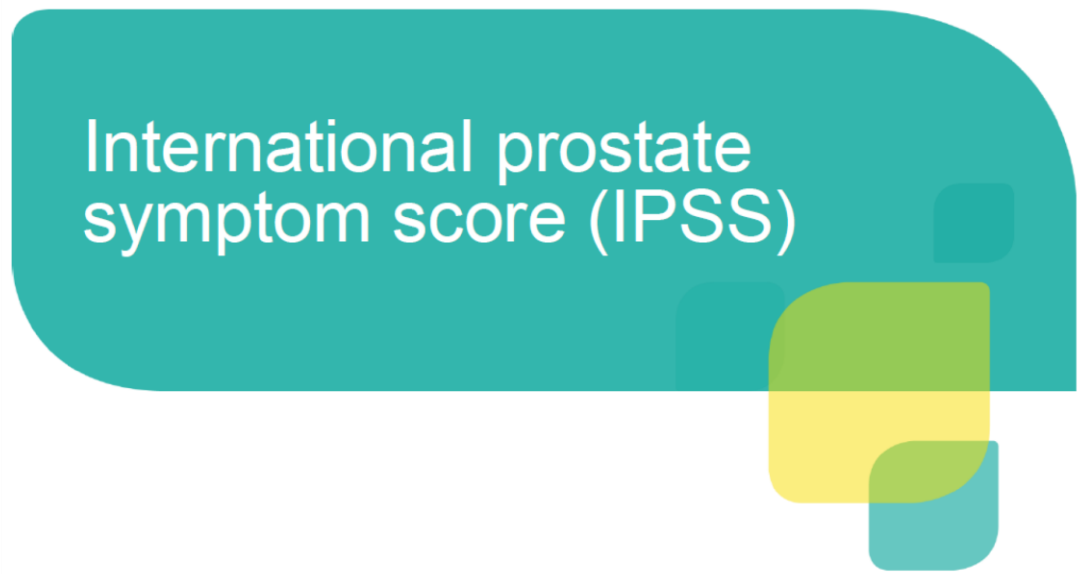
	None	1 time	2 times	3 times	4 times	5 times or more	**Your score**
Nocturia Over the past month, many times did you most typically get up to urinate from the time you went to bed until the time you got up in the morning?	0	1	2	3	4	5	

Add Your scores and write total in the box to the right.	

Total score: 0-7 Mildly symptomatic; 8-19 moderately symptomatic; 20-35 severely symptomatic.

Quality of life due to urinary symptoms	Delighted	Pleased	Mostly satisfied	Mixed: Equally satisfied / dissatisfied	Mostly dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition the way it is now, how would you feel about that?	0	1	2	3	4	5	6

Appendix IIIB: International Prostate Symptom Score (Swahili Version)



Hesabu ya IPSS ni nini?

Dodoso la IPSS humruhusu daktari wako wa mfumo wa mkojo kuelewa vyema uzito wa dalili zako za mfumo wa mkojo. Hutumika kwa wanaume ambao wana shida ambazo zinazohusiana na tezidume iliyoongezeka ukubwa. Inasaidia katika kuamua ni chaguo gani la matibabu linafaa kwako na kisha kufuatilia uboreshaji tiba yako.

Inahusisha nini?

Kuna maswali 7 yanayohusiana na dalili tofauti unazoweza kuwa nazo na swali moja linalohusiana na ubora wa maisha yako kwa ujumla. Mara baada ya kujibu kila swali, thamani yake hujumlishwa pamoja ili kupata hesabu ya uzito wa dalili zako.

Tafadhali jaza fomu na uje nayo kwenye tarehe yako ya kuonwa wagonjwa wa nje.

IPSS: Dodoso la Kiswahili

Namba ya Mgonjwa.: _____ Tarehe: _____

	Hapana Kabisa	Chini ya mara 1	chini ya nusu ya wakati	karibu nusu ya wakati	Zaidi ya nusu ya wakati	karibu kila mara	**Hesabu yako**
Mkojo kubaki kwenye kibofu Ndani ya mwezi uliopita, umehisi kutokumaliza mkojo mara ngapi mara baada ya kukojoa?	0	1	2	3	4	5	
Marudio Katika mwezi uliopita, ni mara ngapi ulilazimika kurudia kukojoa tena chini ya saa mbili baada ya kumaliza ukojoa?	0	1	2	3	4	5	
Mkojo kuja na kurudi Ni mara ngapi umejihisi kupata mkojo unaokuja na kukata wakati wa kukojoa katika mwezi mmoja uliopita?	0	1	2	3	4	5	
Uharaka Katika mwezi uliopita, ni mara ngapi umepata ugumu wa kuahirisha tendo la kukojoa, au kujizuia usijikojolee?	0	1	2	3	4	5	
Mkondo dhaifu wa mkojo Katika mwezi uliopita, ni mara ngapi umepata mkojo wenye mkondo dhaifu?	0	1	2	3	4	5	
Kujikamua wakati wa kukojoa Katika mwezi uliopita, ni mara ngapi ulilazimika kujikaza na kusukuma mkojo kwa nguvu?	0	1	2	3	4	5	

	Hakuna	mara 1	mara 2	mara 3	mara 4	mara 5 au zaidi	Jumla ya hesabu
Kukojoa Usiku Katika mwezi uliopita, ni mara ngapi uliamka kukojoa usiku kutokea saa ulipopanda kitandani kulala hadi asubuhi ulipoamka?	0	1	2	3	4	5	

Jumlisha alama na uweke jumla kwenye kisanduku kilicho kulia	

Jumla ya alama: 0-7 dalili za chini; 8-19 dalili za wastani ; 20-35 dalili kali.

Ubora wa maisha kutokana na dalili za mkojo	Nimefurahiya	Nimeridhika sana	Nimeridhika kiasi	Mchanganyik okuridhika/ku toridhika	Mara nyingi kutoridhika	Sina furaha	Ya kutisha
Ikiwa utaishi maisha yako na dalili hizi za mkojo ulizonazo sasa, ungejisikiaje kuhusu hilo?	0	1	2	3	4	5	6

Appendix IV: Ethical Clearance

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATION

Ref. No.DA.282/298/01.C/1914 Date: 18/09/2023

MUHAS-REC-09-2023-1914
JOSEPH MARTIN LORI
SCHOOL OF MEDICINE
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: THE CORRELATION BETWEEN VISUAL SYMPTOM SCORE AND THE INTERNATIONAL PROSTATE SYMPTOM SCORE IN GRADING LOWER URINARY TRACT SYMPTOMS AT MUHIMBILI NATIONAL HOSPITAL

Reference is made to the above heading,
I am pleased to inform you that the Chairperson has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 18/09/2023
EXPIRATION DATE OF APPROVAL: 18/09/2024

STUDY DESCRIPTION:
Purpose:
The purpose of this cross-sectional analytical study is to assess if there is any correlation between the Visual Prostate Symptom Score and the International Prostate Symptom Score in grading the lower urinary tract symptoms at Muhimbili National Hospital.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided:
https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2014844.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country,
8. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
9. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
10. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee

DIRECTOR
Research,
Publications &
Innovations
Box 65001

Appendix V: Permission Letter

THE UNITED REPUBLIC OF TANZANI

MINISTRY OF HEALTH

MUHIMBILI NATIONAL HOSPITAL

In reply please quote;

Ref. No.: MNH/CRTCU/Perm/2023/533 Date: 20th October 2023

Head of Department

- Urology

- Outpatient

Muhimbili National Hospital

RE: DATA COLLECTION PERMIT AT MNH.

Name of Student	**Joseph Martin Lori**
Title	**"The Correlation Between Visual Symptom Score and the International Prostate Symptom Score in Grading Lower Urinary Track Symptoms at MNH".**
Institution	Muhimbili University of Health and Allied Sciences
Supervisor	Prof. Charles Mkony (MUHAS)
Co – Supervisors	Dr. Kimuy Njiku (MNH)
Period	20th October, 2023 to 30th December, 2023

Approval has been granted to the above principal investigators to collect data at MNH. Dissemination of study findings at MNH shall be overseen by **Dr. Kimuy Njiku** (MNH) supervisor.

Kindly ensure the named principal investigator abide to the ethical principles and other conditions of the research approval.

Sincerely,

Dr. Jessie Mbwambo

Head of Clinical Research, Training and Consultancy Unit

c.c DSS, DMS

c.c Dr. Kimuy Njiku

c.c Joseph Martin Lori

Upanga West, Kalenga Street, Plot No. 10480/3, P.O. BOX 65000, Dar es Salaam, Tanzania.
Telephone: +255-22-2151367-9, Telephone: +255-22-2151351-2
Email: info@mnh.or.tz, Website: www.mnh.or.tz

Appendix VI: Permission Letter

Mr. Mitten Patel,
West Hertfordshire Teaching Hospital NHS

Vicarage Rd, Watford WD18 0HB,
miten.patel9@nhs.net,
9th October 2024

Research Office,
The Aga Khan University,
P. O. Box 125,
Dar es salaam, Tanzania.

Dear Team,

RE: CONSENT LETTER FOR USE OF MY RESEARCH WORK

I am writing to officially grant permission for other researchers in the field to use my research output, the validated Swahili version of the International Prostate Symptoms Score (IPSS).

This consent allows for the replication, adaptation, and application of my work in future research endeavors, provided that appropriate citation is given to my original work. This agreement is intended to encourage collaboration and advancement in our field while ensuring that my contributions are acknowledged.

Should any questions arise, researchers may reach me through my email address or through the University for Correspondence.

Thank you for your cooperation.

Sincerely,

Mr. Miten Patel
Alumni, The Aga Khan University, Tanzania