

**CASE CONTROL STUDY OF SEXUAL DYSFUNCTION IN
PATIENTS WITH LOWER URINARY TRACT SYMPTOMS AT
MUHIMBILI NATIONAL HOSPITAL.**

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**CASE CONTROL STUDY OF PATIENTS WITH LOWER
URINARY TRACT SYMPTOMS AT MUHIMBILI NATIONAL
HOSPITAL**

By

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for the Degree of Master of Medicine (General Surgery) in the
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CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied sciences a dissertation entitled: Case control study to assessment of Erectile Dysfunction in patients with Lower Urinary Tract Symptoms attending Urology clinic at Muhimbili National Hospital



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SUPERVISOR

Date

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DEDICATION

To my lovely fiancée

To my late mother who so wished for me to become a doctor.

ABSTRACT

Objectives

Erectile dysfunction can be caused by several factors and leads to reduction in quality of life of the affected patient. Lower urinary tract symptoms have been implicated as one of the causes of ED. The objective of the study is to assess the frequency and severity of erectile dysfunction in patients with LUTS.

Methods

Two hundred thirty eight patients were studied in a case control study and the duration of the study was eight months. One hundred twenty two had LUTS formed the study group and one hundred sixteen without LUTS as controls were enrolled in this study. The demographic data, relevant history, physical examination and investigations were obtained. They all participated in filling self administered questionnaire on ED. Patients were assessed by their degree of ED as severe, moderate, mild or normal. They responded to the five questions of Sexual Health Inventory for Men (SHIM) abridged index of erectile function with the total score indicating the following degree of ED: Severe ED score 5 to 10; moderate score 11 to 15; mild ED score 16 to 20 and no ED, ED score 21 to 25. Descriptive profiles of two groups were compared. The two groups were divided into age groups of 18-30years, 31-40 years, 41-50 years, 51-60 years, 61-70 years and 71 – 80 years.

RESULTS

A total number of 238 responded to the questionnaire. Out of those 122 were patients with LUTS and 116 were the controls. In the study group 38 (31%) had severe ED, 30 (25%) had moderate ED, 35 (35%) mild ED, 14 (11.5%) were normal. And in control group 18 (15.5%) had severe ED, 20 (17.2%) had moderate ED, 27 (23.3%) had mild ED and 51 (44%) had normal ED.

In the study group there were 44 (36%) of patient's in the young age group (below 40 years) while majority 78(64%) were above 40 years. In control group 45(39%) patients were below 40 years and 71(61%) patients were above age of 40. The majority of patients in both group have ED however magnitude of ED in study group is higher (84.4%) compared to control group 56% and the difference is statistically significant (P value =0.008)

When age is considered by eliminating the elderly age groups a comparison of ED between study and control group in the young age (below the age of 40), the patients with LUTS are more affected and the difference is statistically different with P value = 0.028.

The finding in the elderly age group (age more than 40 years) found that patients with LUTS have higher risk of ED compared to control group and difference is statistically significant with P value = 0.0065.

CONCLUSION

This study found that erectile dysfunction is more prominent in patients with LUTS compared with patients with other diseases in both young and elderly. The study further showed that LUTS as an independent variable other than age contribute separately to ED.

These findings reproduce those found in other continents reinforcing the need to further investigate this association both in basic research and in clinical practice.

ABBREVIATIONS

ED	-	Erectile Dysfunction
LUTS	-	Lower Urinary Tract Symptoms
EF	-	Erectile Function
IIED	-	International Index of Erectile Dysfunction.
MUHAS	-	Muhimbili University of Health and Allied Sciences
SHIM	-	Sexual Health Inventory for Men

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1. CHAPTER I

1.1.0. INTRODUCTION ✓

✓ Erectile dysfunction (ED) is defined as the inability to attain and maintain an erection sufficient for satisfactory sexual performance¹.

✓ There are several ways of assessing ED.

Physiologically based diagnostic procedures such as medical social and sexual history are useful,²⁻⁴ it has been proposed that ED, is best assessed by means of patients self report technique⁴⁻⁷.

The international index of Erectile dysfunction (IIED), a self administered sexual function questionnaire with 5 major domains has demonstrated high specificity and sensitivity for detecting changes in erectile function. IIED discriminate well between men with and without ED and has been used to assess therapeutic efficacy and outcomes in patients with ED⁷⁻⁸.

The modified IIED includes a six item domain of Erectile Function (EF) that was previously investigated in an effort to develop a quantitative and qualitative staging system of erectile function¹⁰⁻¹¹

The EF domain demonstrate favorable statistical properties as diagnostic tool not only in distinguishing between men with and without ED but also in classifying levels of ED severity¹⁰⁻¹¹. The Sexual Health Inventory for Men (SHIM) one of the

simpler questionnaire in use has five questions. In this study therefore, the author looks and uses the SHIM in analyzing domain of IIED in respect to ED severity in patients with LUTS and those without LUTS. The objective is to assess effect of LUTS on erectile function of patients in corresponding age groups.

2. CHAPTER II

2.1.0. LITERATURE REVIEW

Erectile dysfunction is defined as the consistent inability to attain or maintain an erection sufficient for satisfactory sexual performance. ¹

Erectile dysfunction (ED) affects more than 150 million men worldwide. ²

The disease is very prevalent in men over the age of 40 years and it is known to increase with age. ED can be classified as

- Organic, due to vascular, neurologic, hormonal, or carvenosal abnormalities or lesions.
- Psychogenic, due to central inhibition of the erectile mechanism without a physical insult.
- Mixed organic/psychogenic, due to a combination of organic and psychogenic factors.

In most patients a combination of organic and psychogenic components are involved.

In most men ED is associated with multiple risk factors, although one factor or a set of risk factors may be dominant.

The first description for erectile dysfunction (ED) dates from about 2000 BC and was set down on Egyptian, Papyrus. Two types were described then, natural impotence (The man is incapable of accomplishing the sex act) and super natural impotence (from evil charm and spells ³. Later Hippocrates described many cases of male impotence among rich

inhabitants of Scythia and concluded that too much horse riding was the cause the poor were not affected because they traveled by foot³.

On penile erection Aristotle stated three branches of nerve carry spirit and energy to the penis and that erection is produced by influx of air (Brenot 1994)³. His theory was well accepted until Leonardo da Vinci (1504) noted a large amount of blood in erect penis of hanged men and cast doubt on the concept of air filled penis. His writings however were kept secret until the beginning of 20th century (Brenot, 1994)³. Nevertheless in 1585 in ten books on surgery and book on reproduction, Ambroise Pare gave an accurate description of penile anatomy and the concept of erection³. He described the penis as being composed of concentric coats of nerves, veins and arteries and of two ligaments (corpora cavernosa) a urinary tract; and four muscles. "When a man become inflamed with lust and desire blood rushes into the male member causing the erection"³

Many theories have since been added to explain the haemodynamic events during erection and detumescence. Much of the current understanding of erectile physiology was discovered in the 1980's and 1990's. In addition to the role of smooth muscles in regulating arterial and venous flow, three dimensional structure of the tunica albuginea and its role in venous occlusion have been elucidated. An important breakthrough in the understanding of neural control is the identification of nitric oxide as major neurotransmitter; for erection and phosphodiesterases (PDE's) in returning the

penis to flaccid state³. The role of endothelium in regulating smooth muscle tone and the

intercellular link by means of gap junctions has also been uncovered. In pathophysiology of erection, the changes in smooth muscle, endothelium and fibroelastic frame work with diabetes mellitus, atherosclerosis and ageing has also been identified^{3 4,5,6}

2.1.1. FUNCTION ANATOMY OF PENIS

The penis is composed of three cylindrical structures, the paired corpus, carvenosum and corpus spongiosum which houses the urethra, covered by loose subcutaneous layer and the skin.

The flaccid length of the penis is controlled by the contractile state of the erectile smooth muscle and varies considerably owing to emotion and outside temperatures³

In one study, the erectile length of the penis measured from pubopenile junction to the meatus was in a 8.8 cm flaccid state, 12.4cm stretched and, 12.9cm when erect with neither mans age nor the size of flaccid penis accurately predicting erectile length³.

In another study, the author concluded that about 15% of men have downward curve during erection; erection angle is below horizontal in one fourth of men and shorter erection lengths in the range of 11.4cm – 14.6 cm occur in 49% of men³

2.1.1.1 Tunica Albuginea

The tunica covering the corpora cavernosa is a bilayered structure with multiple sublayers. Inner layer bundles support and contain cavernous tissue and are oriented circularly radiating from this inner layer intra cavernosal pillars acting as struts, augmenting the septum that provide essential support to the erectile tissue. Outer layer bundles are

oriented longitudinally, extending from glans penis to the proximal crura; they insert into the inferior pubic rami, but are absent between 5 and 7 o'clock positions. In contrast the corpus spongiosum lacks an outer layer ensuring low pressure during erection³.

2.1.1.2 Corpora cavernosa, corpus spongiosum and glans penis

The corpora cavernosa comprise two spongy paired cylinders contained in the thick envelope the tunica albuginea. The septum between the two corpora cavernosa is incomplete in men but it is complete in some species such as dog³.

Each corpus cavernosum is a conglomeration of sinusoids, larger in the center and smaller in the periphery. In the flaccid state, blood slowly diffuses from central to peripheral sinusoids and blood gas level are similar to those of venous blood. During erection the rapid entry of arterial blood to both central and peripheral sinusoids changes the intracavernous blood gas levels to those of arterial blood. Structure of the corpus spongiosum and glans is similar to that of corpora cavernosa except that the

sinusoids are larger, the tunica is thinner in the spongiosum and is absent in the glans

3,4,5,6

2.1.1.3 Arterial supply

The main source of arterial; supply to the penis is usually through the internal pudendal artery a branch of internal iliac artery.

The internal pudendal artery becomes the common penile artery after giving off a branch to the perineum. Three branches of penile artery are dorsal, the bulbo urethral and the cavernous artery. The cavernous artery is responsible for tumescence of the corpus cavernosum and dorsal artery for engorgement of glans penis during erection.

The bulbourethral artery supplies the bulb and corpus spongiosum.

2.1.1.4 Venous drainage

The venous drainage from the three corpora originates in tiny venules leading from the peripheral sinusoids immediately beneath the tunica albuginea.

These venules travel in the trabeculae, between the tunica and the peripheral sinusoids to form subtunica venular plexus before existing as the emissary veins through the tunica albuginea in the end they form pudental veins.

2.1.2. Haemodynamics and mechanism of erection and detumescence.

2.1.2.1 Corpora cavernosa.

The penile erectile tissue, specifically the cavernous smooth of the arteriolar and arterial wall plays a key role in erectile process.

In the flaccid state these smooth muscles are tonically contracted, allowing only a small amount of arterial flow for nutritional purposes. Sexual stimulation triggers release of neurotransmitters from the cavernous nerve terminals. This results in relaxation of these smooth muscles and the following events;

- 1) Dilatation of the arterioles and arteries by increased blood flow in both diastolic and systolic phases.
- 2) Trapping of the incoming blood by the expanding sinusoids.
- 3) Compression of the subtunical venular plexuses between the tunica albuginea and the peripheral sinusoids reducing the venous outflow.
- 4) Stretching the tunica to its capacity which encloses the emissary veins between the inner circular and outer longitudinal layers and further decreases venous outflow to a minimum.
- 5) An increase in intracavernous pressure (maintained at around 100mm Hg) which raises the penis from the dependent position to erect state (full erection phase)
- 6) A further pressure increased (to several hundred millimeters of mercury) with contraction of the ischiocavernosus muscles (rigid erection phase)

✓Erection thus involves sinusoidal relaxation, arterial dilatation and venous compression (Lue et al, 1983)^{6,7,8,9,10,11,12,13,14}

2.1.2.2 Corpus spongiosum and glans penis

During erection the arterial flow increases in similar manner as in corpora cavernosa, however the pressure in the corpus spongiosum and the glans is only one third to one half of that corpora cavernosa because the tunica covering (thin over the corpus spongiosum and vitally absent over the glans) ensures minimal venous occlusion.
16,17,18,19

2.1.2.3 Smooth muscle physiology

Spontaneous contractile activity of cavernous smooth muscle has been recorded in vitro and in vivo. Mandrek (1994)³ demonstrated spontaneous mechanical activity with a frequency of 6 to 30 contractions per minute accompanied by fluctuations in membrane

potential stimulation of the tissue with tetraethylammonium chloride and norepinephrine produced strong tonic contractions with relative electrical silence
10,11,12,13

In the study of myosin isoforms in smooth muscle cells in the corpus cavernosum penis, Disanto and associates (1998)⁶ reported that the corpus cavernosum smooth

muscle cells possess an overall myosin isoform composition intermediate between aorta and bladder smooth muscles which generally expresses tonic and phasic like characteristics respectively^{17,18,19}

2.1.2.4 Neuroanatomy and neurophysiology of penile erection

2.1.2.4.1 Peripheral pathways.

Innervations of penis is both autonomic (sympathetic and parasympathetic) and somatic (sensory and motor)

From the neurons in spinal cord and peripheral ganglia, the sympathetic and parasympathetic nerves merge to form the cavernous nerve which enter the corpora carvenosa and corpora spongiosum to effect the neurovascular events during erection and detumescence. Somatic nerve are primarily responsible for sensation and the contraction of the bulbocavernosus and ischiocarvenosus muscles.

2.1.2.4.2 Autonomic pathways

The sympathetic pathways originates from the 11th thoracic to 2nd lumbar spinal segments and passes through the white rami to the sympathetic chain ganglia. Some fibers then travel through the lumbar splanchnic nerves to the inferior mesenteric and superior hypogastric plexus, from which fibers travel in the hypogastric nerves to the pelvic

plexus. In humans the T10 and T12 segments are most often the origin of the sympathetic fibers and the chain ganglia cells projecting to the penis are located in sacral and caudal ganglia (De Groat and Booth, 1993)³

Parasympathetic pathways arise from the neurons in the intermediolateral cell columns of the second third and fourth sacral spinal cord segment.

The cavernous nerves are branches of the pelvic plexus that innervate the penis.

Stimulation of the pelvic plexus and cavernous nerve induces erection whereas stimulation of the sympathetic trunk induces detumescence^{3,4}

2.1.2.4.3 Somatic pathways

The somatosensory pathways originates at the sensory receptors in the penile skin, glans and urethra and within the corpus cavernosum.

The nerve fibers from the receptors converge to form bundles of the dorsal nerve of the penis, which joins other nerves to become the pudendal nerve. The latter enter the spinal cord via the S2 – S4 roots to terminate on the spinal neurons and interneurons in the central gray region of the lumbosacral region (Mc Kenna, 1998)³.

Activation of these sensory neurons sends messages of pain, temperature and touch by means of spinothalamic and spinoreticular pathways to the thalamus and sensory cortex for sensory perception.

Contraction of the ischiocavernous muscles produces the rigid erection phase.

Rhythmic contraction of the bulbocavernosus muscle is necessary for ejaculation.

2.1.2.4.4 Supraspinal pathways

Studies in animals have identified the medial preoptic area (MPOA) and the paraventricular nucleus of the hypothalamus and hippocampus as important integration centers for sexual function and penile erection (Sachs and Meise, 1988; Marson et al, 1993)³

Efferent pathways from the MPOA enter the medial forebrain bundle and the midbrain tegmental region (near the substantia nigra)

A variety of neurotransmitters including dopamine, norepinephrine and serotonin have been identified in the hypothalamus. It has been suggested that dopaminergic and adrenergic receptors promote sexual function and serotonin inhibit it (Foreman and Wernicke, 1990)³

There are 3 types of erection psychogenic, reflexogenic and nocturnal. Psychogenic erection is a result of audiovisual stimuli or fantasy. Impulses from the brain modulates spinal erection centers (T11 – L2 and S2 – S4) to activate the erectile process. Reflexogenic erection is produced by tactile stimuli to the genital organs.

The impulses reach the spinal erection centers some then follow ascending tract, resulting in sensory perception, where as others activate the autonomic nuclei to send messages through the cavernous nerves to the penis to induce erection. This type of erection is preserved in patients with upper spinal cord injury. Nocturnal erection

occurs mostly during rapid eye movement (REM) sleep. During REM sleep, the cholinergic neurons in

the lateral pontine tegmentum are activated whereas the adrenergic neurons in the locus coeruleus and the serotonergic neurons in the midbrain raphe are silent.

This differential activation may be responsible for nocturnal erections during REM sleep^{14,15,16}

2.1.3. Pathophysiology of erectile dysfunction

The increasing incidence of impotence with age was noted by Kinsey and coworkers in 1948³; only 1 of 50 men at age 40 years, but 1 in 4 by age 65 years. In 1990, Diokno and associate reported that 35% of married men aged 60 years and older suffer erectile impotence³.

Modern probability sampling techniques were used by two surveys obtaining prevalence data of Erectile Dysfunction in the United States. The Massachusetts Male Aging Study (MMAS) and the National Health and Social Life Survey (NHSLs). From the prevalence rates reported in the MMAS study between the age of 40 and 70 years, the probability of complete Erectile Dysfunction increased from, 5.1 % to 15%, moderate dysfunction increased from 17% to 34% and mild dysfunction remained constant at about 17%^{3,4}

Similar results were reported from European studies for erectile dysfunction.

In Danish study of 411 men responding to questionnaire and 100 subsequently interviewed by professionals about 40% of men reported some degree of erectile dysfunction (Solstad and Hertoft, 1993)^{3,4}. In a Swedish study there was a linear decrease in sexual activity with increasing age 76% of those aged 45 years were sexual active where as only 16.7% of these men aged 80% were sexually active (Malmsten et al, 1997)^{3,4}.

A study from France reported 11% erectile dysfunction alone and 22% erectile dysfunction and premature ejaculation in men aged 18 to 24 years. For those men aged 60 to 69 years, similar responses were 27% and 41%, respectively (Beijin, 1999)^{3,4}.

In Tanzania a study done by YM Kapona and CS Yongolo on assessing male erectile dysfunction as seen in Dar es Salaam city over a period of three years January 2001 to December 2003, 4060 patient were seen at reproductive health clinic out of these two hundred and three patient had erectile dysfunction (5%)¹⁵

2.1.4. Classifications:

As recommended by international society of impotence research erectile dysfunction is classified as elaborated below:

2.1.4.1. Psychogenic

Previously it was believed to be the most common type with 90% of impotent men thought to suffer from this condition (Maters and Johnson, 1970)³. This belief has given way to the realization that most men with erectile dysfunction have mixed conditions that may be either predominantly functional or predominantly physical. Two possible mechanisms have been proposed to explain the inhibition of erection in psychogenic dysfunction: direct inhibition of the spinal erection center by the brain as an exaggeration of the normal suprasacral inhibition (Steers, 1990)³ and excessive sympathetic outflow or elevated catecholamine levels which may increase penile smooth muscle tone, to prevent relaxation necessary for erection^{21,22,23,24,25}

2.1.4.2. Organic causes of Erectile Dysfunction

2.1.4.2a. Neurogenic

Medial preoptic area; paraventricular nucleus, and the hippocampus have been regarded as important integration centers for sexual drive and penile erection (Sachs and Meisle, 1988)³. Pathological processes in these regions such as Parkinson disease, stroke, encephalitis or temporal lobe epilepsy are often associated with erectile dysfunction.^{27,28,29,30}

2.1.4.2b. Endocrinologic

Androgens influence the growth and development of male reproductive tract and male secondary sex characteristics. Their effects on libido and sexual characteristics are well established.^{31,32,33,34}

Hyperprolactinemia whether from pituitary adenoma or drugs, results in both reproductive and sexual dysfunction. Hyperprolactinemia is associated with low circulating levels of testosterone which appear to be secondary to inhibition of gonadotropin releasing hormone secretion by the elevated prolactin levels (Leonaerd et al, 1989)^{36,37}

Diabetic mellitus, although the most common endocrinologic disorder, causes ED through its vascular, neurologic endothelial and psychogenic complications rather than hormone deficiency per se^{38,39,40}

ED has been estimated to occur in 35% to 75% of men with diabetic mellitus, with onset occurring at earlier age than those without diabetic. Deterioration of sexual function was first symptom in 12% of diabetics^{38,39,40}.

2.1.4.2c. Arterio genic

Atherosclerotic or traumatic arterial occlusive disease of the hypogastric cavernous helicine arterial tree can decrease the perfusion pressure and arterial flow to the

sinusoidal spaces thus decreasing the time to maximal erection and decrease rigidity to the penis (Michal and Ruzbarsky)^{39,40}.

2.1.4.2d. Venous Leakage.

Failure of adequate venous occlusion has been proposed as one of the most common causes of vasculogenic impotence (Rasfer et al 1988)^{39,40,41}

Veno-occlusive dysfunction may result from the following pathophysiologic processes.

- i) Presence or development of large venous channels draining the corpora cavernosa.
- ii) Degenerative changes (Peyronies disease, old age and diabetes or traumatic injury to the tunica albuginea resulting in inadequate compression of subtunical and emissary veins.
- iii) Structural alteration in fibroelastic component of the trabeculae, cavernous smooth muscle and epithelium may result in venous leak
- iv) Acquired venous shunts, the result in operative correction of priapism.

2.1.4.2e. Drug - induced

Various classes of therapeutic drugs can cause erectile dysfunction as undesired effect (Wein and Van Arsdalen, 1988)^{21,22,23}.

Central neurotransmitter pathways including S-hydroxytryptaminergic, noradrenergic and dopaminergic pathways involved in sexual function may be disturbed by antipsychotic and antidepressants and some centrally acting hypertensive drugs.

2.1.4.3. Mixed

Factors like hyperlipidemia atherosclerosis, hypertension, chronic renal failure, cardiac diseases liver failure cachexia and chronic debilitation are associated with diminished erectile function.

2.1.5. Assessment of Erectile Dysfunction.

History and physical examination are the paramount factors contributing towards the successful diagnosis of ED. Questionnaires serve as important adjunct to the proper diagnosis of ED. The patient fills out the questionnaire to delineate the extent of the erection problem. There are several questionnaires available. The international Index of Erectile Function (IIEF), a self-administered sexual function questionnaire with 15 items, has demonstrated high specificity and sensitivity for detecting changes in erectile function (EF) associated with treatment. The IIEF discriminates well between men with and without ED and has been used to assess the therapeutic efficacy and outcomes in patients with ED. ¹⁸

However one of the simpler questionnaires in use is the Sexual Health Inventory for Men (SHIM), which has five questions which are simple, straight forward and yet comprehensive it is appended in this paper. This questionnaire deals specifically with

erectile activity using a five-point Likert type scale and has been translated to Swahili.

2.1.6. Symptoms of lower urinary tract diseases

The following are symptoms which are suggestive of urinary tract disease

i) Nocturia

Awakening at night (more than three times) to void which may be caused by lower urinary tract disease, such as bladder neck obstruction, neurogenic dysfunction infection and calculi

ii) Frequency

Normal person voids three to five times a day.

iii) Polyuria

Means larger than normal total urine volume (more than 2000 mls) and is characteristic of metabolic disorders, renal disease and excessive fluid intake.

iv) Oliguria

Diminished urine volume less than 400mls a day.

v) Anuria

Complete suppression of urine formation

vi) Urgency

A precipitous desire to void, making control difficult or impossible.

vii) Dysuria

Means pain or discomfort on urination.

viii) Hesitancy denotes undue delay and difficulty in initiating voiding.

ix) Intermittency

Interrupted urinary stream thought to be due to detrusor fatigue is presence of bladder neck obstruction.

x) Incontinence

Involuntary loss of urine.

xi) Pyuria

Presence of pus in urine

xii) Haematuria

Blood in urine may be gross or microscopic painless or painful also it may be further classified by its relationship to the act of micturation as initial terminal or total.

xiii) Urethral discharge

2.1.7. Causes of lower urinary tract symptoms

1) Calculus disease of urinary bladder

Stones can occur in the urinary tract and the ureter and the bladder may develop stones which can cause LUTS. The stone is usually composed of crystalline component and an organic matrix. Stone formation is facilitated by factors that increase solute concentration in urine, alter urinary pH and provide nidus for precipitation. The other factors contributing to stone formation are stasis, infection and defect in metabolism leading to accumulation of salts.

Patient presents with pain, systemic or local symptoms of infection which include fever, chills, frequency, dysuria, urgency and painful haematuria and urine retention.

2) Infection to the Lower Urinary tract.

The bladder, prostate and the urethra can be infected by different pathogens. Urinary tract infection (UTI) may occur and may affect both upper and lower urinary tract while there may be isolated infection to one anatomical part. Bacteriuria (100,000 org/ml) is defined as significant presence of pathogenic bacteria in urine. Infection of the lower urinary tract by bacteria and other organisms cause several symptoms of LUTS.

Factors which causes urinary tract infection local factors like urinary stasis and presence for calculi. Systemic abnormalities such as severe liver dysfunction malnutrition and diabetes mellitus.

3) Obstruction of Urinary bladder

The causes may be congenital or acquired, intrinsic or extrinsic. Neoplasm like Benign Prostate Hyperplasia, Carcinoma of the Prostate, stricture disease, trauma, stone and congenital anomalies.

2.2.0. STATEMENT OF THE PROBLEM

Sex as a subject has always been a taboo in our society and neglected by our physicians. There are few or no clinics established to deal with sexual problem and sexuality as a subject is not taught as a routine in our medical school. Therefore most



of the patients with sexual problems including erectile dysfunction are not well provided with required service.

Most physicians take for granted the issues regarding sex and when in need of referring the patients they send them to Urologist who are already burdened by a large number of patients in need of other urological problems notably patients with Bladder outlet Obstruction.

On some of the daily newspapers there are seen a lot of advertisement about drugs that can boost ones sexual abilities announced by local herbalists probably highlighting on the magnitude of the problems.

Besides not much is known in our literature about the magnitude, causes and treatment of Erectile dysfunction in the general population or in selected groups as one of the problem needing attention.

Lower urinary tract symptoms have been associated with sexual disorders including erectile dysfunction. At MNH one of the leading causes of morbidity is LUTS caused by BPH and stricture disease (unpublished monthly morbidity and mortality data department of surgery). There is a clinic which deals with urological patients. It is important to know how much does LUTS contribute to sexual disorder in our patients as studies which have been done elsewhere have shown a diversity of sexual disorders.

In a pilot study which was done by the author in 20 patients asked about three core domains (erection, ejaculation and satisfaction) as outlined on IIED suggested a difference between cases (men with lower urinary tract symptoms) and controls. For example men with severe lower urinary tract symptoms report three times decreased force or strength of ejaculation than those with mild lower urinary tract symptoms or those without symptoms. While on erection 12% without LUTS shows decrease in strength, 25% of moderate LUTS showed decrease strength with 38% of severe LUTS showed decreased strength. On assessing whether they were satisfied with their sexual life 70% of patients with LUTS admitted that they are not satisfied with sexual life and consequently affect their quality of life while only 40% in control are not satisfied.

However our area of interest here is erectile dysfunction and therefore

The null hypothesis is to determine whether the frequency of erectile dysfunction in patients with lower urinary tracts symptoms is the same as those without LUTS.

2.3.0. RATIONALE

Health is a fundamental human right and a normal sexual health contributes positively to the general health of an individual. Erectile dysfunction affects Sexual Health and quality of life even in advanced age. The men with erectile dysfunction when studied had significant lower scores in physical functioning and vitality than men without erectile dysfunction¹.

There is very little in literature that addresses ED as a problem in this country and in our region. Therefore Sexual dysfunction is assumed and neglected by most physicians. This study will therefore highlight on the magnitude of ED in patient with LUTS and the control.

Our role as physicians is not only to treat diseases but to improve quality of life of our patients, sexual function being one of them. There is need to highlight on the subject of sexual dysfunction and remind the physicians while providing care for other conditions not to neglect sexual dysfunctions. This will lead to a better quality of life to our patients elevated social and well being of the patients we see. Besides this study will also form part of the fulfillment of my m. med surgery dissertation.

3. CHAPTER III

3.1. BROAD OBJECTIVE

To determine whether LUTS can be an independent factor in causing erectile dysfunction compared with patients without LUTS.

3.2. SPECIFIC OBJECTS

- 1) To assess frequency of erectile dysfunction of men with lower urinary tract symptoms attending clinic and admitted at Muhimbili National Hospital.
- 2) To assess the frequency of erectile dysfunction in male patients attending clinic and admitted to hospital without lower urinary tract symptoms.
- 3) To compare the frequency of erectile dysfunction in the two groups.

4. CHAPTER IV

4.0. METHODOLOGY

4.1. Study design

This was a prospective case control study in order to determine the frequency of erectile dysfunction in patients with LUTS. The study included male patients with lower urinary tract symptoms compared to patient of same age without lower urinary tract symptoms. The period of study was from February, 2007 to October 2007.

4.2. Study area

The study was conducted at Muhimbili National Hospital which is the main tertiary hospital in our country. The focal area was at urology clinic of the surgical department and the male surgical wards.

4.3. Study population

The study included all consecutive male patients who qualified with criteria of the study attending surgical outpatient from the study group. Were the control group where those patients and those who were admitted in the surgical wards during the study period. They were grouped into patients with LUTS (the study group) and control group which consisted of matched patients without LUTS. Self administered questionnaires were given and filled by the patients. The criterion of inclusion was all male attending surgical clinic from age of 18 years and above with stable partners.

The criteria of exclusion were patients diagnosed with diabetes mellitus, patients with pelvic trauma, and patients with indwelling catheter, self confessed drug abusers and those who were operated for prostate, patients with major uncontrolled illness or psychological disorders and those without stable partners.

4.4. Inclusion criteria

All male patients who are 18 years and above with stable partners who presented to the urology clinic with lower urinary tract symptoms while the control group consisted of matched male patients attending other surgical clinics or admitted in the ward with other surgical conditions and without LUTS.

4.5. Exclusion criteria

The following were patients who were excluded from the study:

- 1) Patient with Diabetes mellitus.
- 2) Trauma involving pelvic region.
- 3) Patients without stable partners.
- 4) Patient with urethral catheters.
- 5) Drug abusers.
- 6) Post prostatectomy (open or TURP).
- 7) The very sick, renal failure and liver failure.
- 8) Psychological disorders.
- 9) Patients with ED before study.

4.6. Determination of sample size

The required sample size will be calculated by using the formula.

$$N = \frac{Z^2 Pq}{d^2}$$

Where n = Desired sample size

p = Proportion of patient with LUTS

z = The percentage distribution of normal corresponding 95% confidence interval which is 1.96

d = Maximum likely error 5%

n = (113)

4.7. RESEARCH TOOLS / INSTRUMENTS

1) Questionnaire

The patient was oriented on the self administered questionnaire and had to feel his response. The questionnaire adopted from the SHIM and translated into Swahili. At the end the questionnaire was collected and its information entered into computer program Epi Info version four.

The study was based on score of the erectile function domain of the Sexual health Inventory for Men (SHIM). The patients were then scored according to the severity of the ED either severe, moderate, mild or normal erection.

2) Desk top computer with epi -nfo 6 program for data analysis was used to enter data for processing and analysis.

3) Stationeries were available for questionnaires and data analysis.

4.8. Data handling

Data was coded cleaned and analyzed

Analysis was done using Epi info 6 computer program.

4.9. Ethical clearance

Ethical clearance was requested and granted by the Ethical committee of MUHAS. The head of Department of surgery and the Director of Hospital services MNH were informed and permission to use the surgical patients was given before the study commenced. The patients nurses and doctors were informed and informed consent was obtained while confidentiality was strictly observed.

4.10. METHODS

General information was given to the nurses and the doctors both in wards and clinics that all patients referred to MNH with lower urinary tract symptoms as well as other patients admitted due to other causes in surgical wards were requested to volunteer to the study. Therefore all patients who participated in the study were well informed and consequently had to fill in a consent form. Confidentiality was assured and all staff was requested to observe this issue.

Questionnaires were distributed following explanation to the patient on the study. The demographic data of the patient was entered and the history and physical examination findings were entered including some laboratory tests. Some information was also

obtained in the patients own files and the questionnaires were followed personally by the author. Medical staffs (Doctors and nurses) both at clinic and male wards were requested by the author to assist him on his research.

4.11. NULL HYPOTHESIS

The ED in patients with LUTS is the same as those without.

4.12. FUNDING

The college provided one million Tanzanian shillings for study

5. CHAPTER V

5.1. RESULTS

A total of 238 patients were included in the study with 122 patients in the study group and 116 in the control group and the period of the study was 8 months from February 2007 to October 2007. The age ranged from 18 years to 85 years.

The mean age was 55.2 years in the study group while in the control group the mean age was 52.9 years. All patients had stable relationship with their partners as this was one of the primary pre-requisite to be entered into the study. Among these patients 190 were married while 48 were single with stable partners.

Overall there were 89 (37%) patients in the age below forty years here in referred as the young age group while the majorities 149 (63%) were above forty years of age the elderly age group. Table I.

The patients were almost equally matched per age group except at the age group 61-70 where there is a slight difference. Table II.

In the study group there were 122 patients. Among these 44 (36%) patients were in the young age group (below 40 years) while the majority 78 (64%) were above the age of forty. (Table III). While in the control group 45 (39%) patients were below the age of forty and 71 (61%) patients were above the age of forty Table IV.

The majority of the patients in both groups have ED Tables III and IV. However the magnitude of ED in the study group was higher 84% table III as compared to the control group 56% table IV.

In the study group 36% of patients are in the young age group. In this group (12) 27% of patients with LUTS have no ED while the majority 32 patients have ED of varying severity which is almost equally distributed that is mild 11 pts, moderate 10 pts and severe 11 patients. While in the elderly age group 9% of patients (7) with LUTS had no ED and the majority 71 patients (91%) have ED of varying severity, mild 26 patients, moderate 18 patients and severe 27 patients table III.

The findings in this study for the control group with 45 patients in the young age group (39%) show that 24 out of 45 (53%) had normal erection while a significant number of patients 21 (47%) have varying degrees of ED severe 5, moderate 9 and mild 7 table IV. Elderly patients in the control group showed that the majority 41 patients 58% have varying degrees of ED varying from severe 13 moderate 12 and mild 16 patients. Some 27 patents (38%) of the elderly control group showed normal erection.

In all age groups the comparative results on the study group and the control shows that there is a statistical significant difference indicating that patients with LUTS have increased risk of ED over the study group with an odd ratio more than 6 table Va.

When age is considered as a risk factor for ED and a comparison of ED between the study group and the control in the young age group show that patients with LUTS are more affected than the control group and the difference is statistically significant with a p value of 0.0006 (Fisher Exact test 0.0038). While a similar comparison of ED in the elderly age group show that patients with LUTS (study group) have a higher risk

of ED as compared to the control group and the difference is statistically significant P value of 0.008 (Fisher Exact Test 0.0045)

TABLE 1: Total numbers of patients by age groups in both the study and the control group.

Age group (Years)	Frequency	Percent	Commulative
18 -30	49	20.6%	20.6%
31 – 40	40	16.8%	37.4%
41 – 50	39	16.4%	53.8%
51 – 60	37	15.4%	69.2%
61 – 70	33	13.9%	83.1%
71 – 80	40	16.8%	100%
TOTAL	238	100%	

The number of patients who are below 40 year old is 89 (37%).

TABLE II: Comparison by age between the study group and the control group.

Age group	LUTS	CONTROL	TOTAL
18 – 30	24	25	49
31 – 40	20	20	40
41 – 50	20	19	39
51 – 60	17	20	37
61 – 70	21	12	33
71 – 80	20	20	27
TOTAL	122	116	238

The patients were almost matched with slight variation at age group 61-70.

Table III: Severity of ED in the patients with LUTS in corresponding age groups.

Study group.

Age group	SEVERE	MODERATE	MILD	NO ED	TOTAL
18 – 30	4	5	7	8	24
31 – 40	7	5	4	4	20
41 – 50	1	8	9	2	20
51 – 60	4	5	6	2	17
61 – 70	8	4	7	2	21
71 – 80	14	1	4	1	20
TOTAL	38	28	37	14	122

Forty four (36%) patients were below age of 40 while 78 (68%) were above 40. The majority of patients 103 (84%) patients show different severity of erectile dysfunction while 19 (16%) has no erectile dysfunction in the study group. In the young age group 32(82%) patients with LUTS had ED while for those above forty yrs 76 (91%) had ED.

TABLE IV: Severity of ED in the patients without LUTS in corresponding age groups.

Control group

Age group	SEVERE	MODERATE	MILD	NO ED	TOTAL
18 – 30	5	4	3	13	25
31 – 40	0	5	4	11	20
41 – 50	0	6	5	8	19
51 – 60	2	2	6	10	20
61 – 70	3	2	2	5	12
71 – 80	8	2	3	4	17
TOTAL	18	24	23	51	116

Forty five patients (39%) of the patients without LUTS were below the age of forty while the majority 71 (61%) were in the elderly group > 40 years. The majority of patients 65 (56%) patients show different severity of erectile dysfunction while 51 (44%) has no erectile dysfunction in the control group. Patients in the young age

group 47% (21) had ED while 53% (24) had no ED. In the elderly group the majority 40 patients (60%) had ED and 27 (40%) had no ED.

✓ **TABLE Va Comparison in the total number of patients with ED in the study and control group.**

	LUTS	CONTROL	Total
ED	103	65	168
NO ED	19	51	70
Total	122	116	238

Odd ratio is $\frac{103 \times 51}{65 \times 19} = 6$

$$65 \times 19$$

Odd ratio is 6 which shows patients with LUTS have increased risk of ED.

Table Vb.

Comparison of ED in the study group and the control group in patients below the age of forty (young age group).

	Study group	Control group	Total
ED	32	21	53
No ED	12	24	36
Total	44	45	89

Odd ratio is $\frac{32 \times 24}{12 \times 21} = 2.3$

$$12 \times 21$$

Fisher's Exact test p value = 0.0006

Table Vc

Comparison of ED in the study group and the control group in patients above the age of forty (the elderly age group)

	Study group	Control group	Total
ED	71	44	115
No ED	7	27	34
	78	71	149

Odd ratio is $\frac{71 \times 27}{7 \times 44} = 6.3$

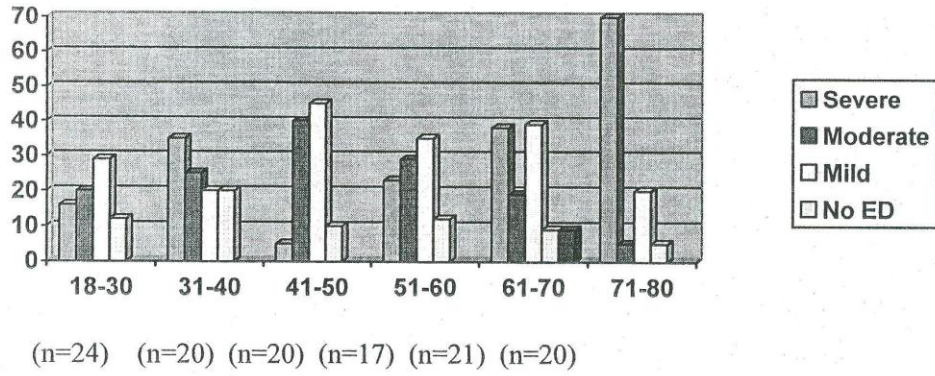
Fisher's Exact test p value = 0.008

Table Vd

Conditions of patients with LUTS

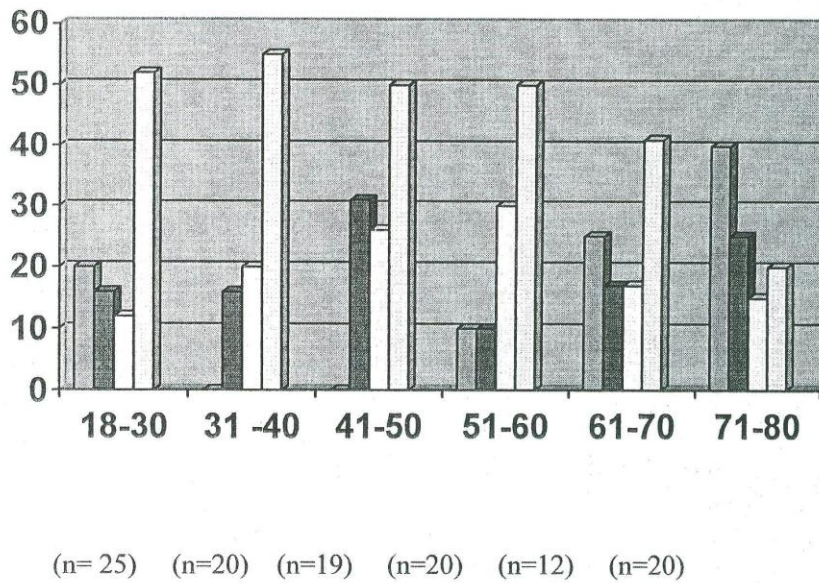
Disease	No	Percentage
BPH	57	47%
U/stricture	43	33%
Cystitis	15	12%
Bladder stone	5	4%
Bilharzia	5	4%
Total	122	100%

FIGURE 1



Percentile of patient with LUTS age group and severity

FIGURE II



Percentile of patients in control group age group and severity

5.3. DISCUSSION

Sexual health is a very important element of overall health and quality of life. Erectile dysfunction therefore can contribute to reduction of quality of life and can be a cause of social and marital disharmony in the Olmstead county study LUTS was associated with significant worse physical and mental health overall.⁴⁶ There are several causes of ED including age, systemic diseases, cardiovascular diseases and others.

There has been a recent increased interest in the association between LUTS and ED, both conditions being prevalent among older men. However LUTS can also occur in younger patients.

The causes of LUTS include BPH which commonly affect elderly men^{42, 43}. Other conditions which can occur at any age include urinary tract stones, schistosomiasis, urethral strictures and urinary tract infections. BPH and these conditions constitute to the majority of the lower urinary tract symptoms which include; nocturia, frequency, urgency, hesitancy, incontinence, dysuria, intermittence, pyuria and haematuria (Wein, 1981).⁴⁴ The aim of the study was to assess the frequency and severity of erectile dysfunction in patients with lower urinary tract symptoms.

Patients characteristics:

The patients studied were all sexually active with stable partners from the age of eighteen and above the majority were married and a few were bachelors.

Epidemiologic studies confirm that the prevalence of ED increases significantly with age and at the age of 40 men have some degree of ED and the prevalence increase with age^{3,4,42,43}. In our series of patients 89 patients (37.4%) were below the age of

40years while the majority 149 (62.6%) were above 40 years age. This result emphasizes on the fact that the majority of patients with LUTS are elderly above 40. Most men above 50 years have some lower urinary tract symptoms owing to enlarged prostate. ⁴⁵ As the case for percentage of patients of BPH in LUTS who are 50% in this study. In 1990 Diokno and associate reported that 35% of married man aged 60 years and older suffer erectile impotence³. Kinsey and coworkers in 1948 found only one in 50 men who are 50 years old had impotence but 1 in 4 by age 65 had impotence.

The age of the patients in the study and the control group are well matched as demonstrated in table II a factor that can bring up a meaningful discussion when comparing the result.

LUTS with ED.

The majority of the patients in the study group 84% had ED of varying severities. The majority of the patients had BPH (50%) as the underlying cause of LUTS. However the other causes were stricture, UTI, Bilhazia and two patients had bladder stones.

Forty four of the patients 36% constituted the young age group. This age (below 40years) does not have a risk for ED specifically if all other causes are eliminated like in our patients whom we had selected to only evaluate LUTS as a cause. In this age group a significant number of patients 32 out of the 44 (73%) had ED. An important study linking LUTS and ED included more than 1600 men who were surveyed with the IPSS and ICSsex questionnaires. A multivariate logistic regression

analysis of the data found that age, obesity, and urinary tract symptoms were the most important correlates of significant ED in the population of men studied.⁵⁴ Specifically, men with elevated IPSS scores felt that their voiding symptoms impaired their sex lives. The study is particularly important because of the multivariate logistic regression design: for the first time, we find data in which urinary symptoms strongly predict ED, even after controlling for a variety of other variables, including age. Both age and urinary symptoms were independently linked to ED; hence, both likely play a role in causing ED. This finding probably supports the null hypothesis.

There were 78 patients over the age of forty years the elderly group who were at risk of ED due to their age and LUTS. Out of these patients we find that 71 (91%) had ED. The percentage of ED is higher than that of the young age group indicating that an addition risk factor i.e age makes the possibility of LUTS to be a factor to developing ED and therefore the two risk factors age and LUTS work together to increase the risk of developing ED. In other study moderate to severe LUTS has been found to occur in 8% -58% of men in 6th decade, in 15% -64% of men in the 7th decade and in 26%-90% of men in 9th decade⁴⁵

ED without LUTS:

Overall the majority of patients without LUTS (control group) 65 (56%) had Erectile dysfunction. These were patients admitted in the surgical wards for different

conditions and without LUTS. The commonest condition for their admission were inguinal hernias, upper and lower limbs' fracture, Hydrocele and others.

Forty five patients were in the young age group which is devoid of the risk factor of age as a cause of ED. Twenty one (47%) out of the 45 patients in this control group a ratio which is about one is to one had ED following cross examination while 53% had normal erections. In the elderly age group where age is a risk factor to ED 41 (60%) had ED while 27 (40%) reported to have no problem with their erection. With increasing age the severity of ED was becoming worse particularly at the age group 71-80 years and this is also an observation with the study group. This finding correlates with study which was done in Spain where Martin Morales found an association of ED with several risk factors including prostate disease, with an age adjusted odds ratio of 2.93². In all patients about 20 of them (8.4%) admitted using herbs to boost their sexual powers and all were in LUTS group

This finding of the majority of the control group to have a high proportion of patients with ED leaves a number of questions and probably calls for a study of the magnitude of ED in the general population. One could speculate here that the magnitude of ED in the studied patients probably was influenced by the different disease they were suffering from which could impact on their sex health. In one study published from the region to a selected group of patients attending an infertility clinic the rate of ED was 5%¹⁵.

Comparison of the frequency of ED in the study and control group:

Overall when the two groups are compared table Va there is indication that LUTS impacts very much on ED with an odd ratio of more than 6. Again when comparing the two groups and taking away the risk factor of age (i.e. the patients with the young age group) we find out that there is a significant statistical difference between the two groups with the patients with LUTS being at risk of developing ED with a p value of 0.0006. (Fisher Exact Test 0.0038)

When age as a second risk factor to LUTS for developing ED is included Table Vc we find that the patients in the study group again develop more ED and the variation reaches a statistical significant difference with those patients without LUTS p value 0.008. (Fisher Exact test 0.0045).

A comparison between the study and control group shows LUTS as a single factor is a cause of ED as compared with the control group. These findings are in comparison to a study done in Argentina, (the LUTS Sex study), which invited urologists to include patients over 40 years old and the study was composed of a questionnaire that included a detailed urological medical history, the International Prostate Symptom Score (IPSS) and the Danish Prostate Symptom Score (DAN-PSS-Sex), 4,754 patient completed the survey. Out of these 4,677 (98%) had LUTS. Among these 3% had severe, while 64% moderate and 31% had mild Erectile dysfunction (ED) in the studied subjects with LUTS, being severe in 13%, moderate in 35% and mild in 52%. Thirty four percent (34%) of the subjects with severe ED, 41% with moderate ED and 16% with mild ED reported being “very bothered” with the condition ⁴⁷.

Until recently, clinicians classically denied the relationship between benign prostatic hyperplasia and lower urinary tract symptoms (LUTS) with sexual dysfunctions. In the past 5 years, several epidemiological and community-based studies throughout the world established a possible relationship between BPH and LUTS with not only erectile dysfunction (ED) but also with other sexual dysfunctions such as ejaculatory disorders.

Rosen et al, reported the MSAM-7 study which was specifically designed to evaluate the association of sexual dysfunctions and LUTS.³ The study consisted of a mailed questionnaire filled out by 14,254 subjects in 7 countries.

The survey included the International prostate Symptoms Score, Dan-PSS-Sex and IIEF questionnaires. 83% of the men 50 to 80 years old were sexually active.

Sexual dysfunctions, including ED and ejaculatory disorders as well as their bothersomeness correlated with both age and severity of LUTS independently of other risk factors. Recent study from UK where 140 patients were treated for LUTS. All men completed IPSS, BPH impact index (BPHII) and sexual function index. Median age was 68 years and 59% scored poorly for sexual drive.⁴⁸

The prevalence of ED and its severity correlated with the severity of LUTS. Severe ED was found in 18% of the subjects with severe LUTS, 9% in the moderate LUTS and 5% in the mild group. ED was found to be present in 41.7% of the general Argentinean population in a previously published report.⁴ Ejaculatory problems were present in 53% of the subjects, being 72% of the patients with moderate LUTS and 28% of those with mild LUTS.

There is also a growing body of evidence of basic science to try to establish a link between these conditions. Common etiological factors have been established, such as autonomic hyperactivity, ischemia due to atherosclerosis, insufficient corporal smooth muscle relaxation capability due to bladder outlet obstruction, among others.

5

BPH therapy also may potentially affect both erectile and ejaculatory functions, including surgery, minimally invasive procedures and medical therapy.

5.4. CONCLUSION

This self administered questionnaire study which shows that there is significant correlation between erectile dysfunction and LUTS. However a significant number of patients in the study group showed some degree of ED. The study further elaborates that LUTS as an independent variable impacts on ED. Erectile dysfunction although hidden and not much discussed is prevalent and further studies in this field are encouraged to be done especially community based study as all previous done studies are clinically oriented.

In conclusion, BPH, LUTS and sexual dysfunctions share common risk factors and possible patho-physiologic mechanisms not limited to age.^{49, 50, 51} Sexual dysfunctions are more common in patients with LUTS than in the general population and its severity is worse in patients with moderate and severe LUTS. Treatment for BPH and LUTS may affect sexual function and there are studies being performed to assess common therapeutic options. Classical urological teaching states that BPH therapy can cause ED, however recent evidence has accumulated suggesting that the treatment of LUTS not only does cause ED but it may help improve sexual function.^{52, 53} Hence, sexual dysfunctions should be discussed when evaluating a patient with LUTS and vice versa.

In conclusion: the frequency of erectile dysfunction in patients with lower urinary tract symptoms is higher than in those patients without lower urinary tract symptoms.

5.5. RECOMMENDATIONS

Approximately 50% of patients who attend surgical clinic or admitted in the surgical wards at MNH have LUTS related illnesses (morbidity mortality data not published). The study has shown that there is a significant number of patients with LUTS who have ED. There is therefore the need of introducing and reinforcing sexuality as a speciality in the urology unit which can focus on the subject and teach physicians on this neglected problem which impacts on the general health and well being of the patient. Urology is yet to be reconstituted as a unit. We call therefore for MNH to expedite the formation of an independent Urology unit and later an Institute of Urology. Since there are a good number of staff and there is a heavy patient load which has led to delay of scheduling operating time and patients suffer from services. "Treatment delayed is treatment denied." The major portion of these patients with LUTS (BPH, urethral stricture and stones) are awaiting surgery.

It is imperative for our government the ministry of health in particular together with MNH administration to open an independent, fully equipped and facilitated urology department so that by correcting LUTS related ailments their sexual life and consequently their quality of life can be improved.

APPENDIX
APPENDIX A: The abridge 5 item version (ED intensity scale) of the international Index of Erectile Dysfunction (IIEED)

	Very low	Low	Moderate	High	Very high
Over the past six months 1. How do you rate your confidence that you could get and keep an erection?	1 almost never/never	2 A few times (about half the time)	3 Sometimes (much more time)	4 Most times always/	5 Almost always/always
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetrations?	1 almost never/never	2 A few times (Much less than half the time)	3 Some times (about half the time)	4 Most times (much more than half	5 Almost always/always
3. During sexual intercourse, how often were you able to maintain your erection after you had penetrated (Entered) your partner?	1 Almost never/never	2 A few times (Much less than half the time)	3 Some times (about half the time)	4 Most times (much more than half	5 Almost always/always
4. During sexual intercourse, how difficult was it to maintain	1 Extremely difficult	2 very difficult	3 Difficult	4 Slightly difficult	5 Not difficult
5. When you attempted	1	2	3	4	5
A few times Sexual intercourse, How often was it Satisfactory for you?	1 Most time Almost never/never	2 Almost (much less than half the always	3 (about half the time)	4 (much more than half	5 always/

The IIEED - 5 score is the sum of the ordinal response to the five items. Thus, the score can range from 5 to 25. Severity categorization of ED: Score 5-5, severe ED; ED; Score 16-20, mild ED; Score 21-25, normal (no ED).

SWAHILI VERSION OF THE ABRIDGE 5 TIMES OF IED

TAFSIRI YA MASWALA MATANO YALIYONKUKULIWA KUTOKA KWENYE MASWALI YA KIMATAIFA YA UPUNGUJU WA NGUVU ZA KIUME.

	Kiasi kidogo sana 1	Kiasi kidogo 2	Kiasi 3	Kiasi kikubwa 4	Kiasi kikubwa sana 5
Katika kipindi cha miézi sita iliyopita: Unajilinganisha vipi kwamba ulijiamini kuwa una uwezo wa kusimamisha uume wako na kudumisha kuendeleza mdingo huo?	Karibu haikuwezekana Haikuwezekana 1	Mara chache chini ya nusu ya mara nilizojaribu 2	Mara nyingi ni nusu ya mara zote nilizojaribu 3	Nilifanikiwa mara nyingi zaidi ya nusu nilizojaribu 4	Karibu mara zote nilifanikiwa 5
Wakati uume wako umesimama kufuatia hamasa kutoka kwa mwenzi wako: Ni mara ngapi ulikuwezesha (ulikuwa na nguvu ya kutosha) kumuingilia mwenzi wako?	Karibu haikuwezekana/Haikuwezekana a 1	Mara chache chini ya nusu ya mara nilizojaribu 2	Mara nyingi ni nusu ya mara zote nilizojaribu 3	Nilifanikiwa mara nyingi zaidi ya nusu nilizojaribu 4	Karibu mara zote nilifanikiwa 5
Wakati wa tenod lenyewe (ngono): Ni mara ngapi uliweza kudumisha mdindo (kuendelea kusimama) baada ya kumuingilia mwenzi wako?	Ni vigumu kupiat kiasi 1	Ni vigumu sana 2	Ni vigumu 3	Ni vigumu kiasi 4	Hakuna ugumu 5
Wakati tendo la ndoa(ngono): je ilikuwa ni vigumu kiasi gain kudumisha uume uliosimama (mdindo) hadi mwisho wa tendo? Ulipojaribu kufanya ngono (tendo la ndoa); ni mara ngapi umeridhika na tendo hilo	Karibu haikuwezekana /Haikuwezekana	Mara chache chini ya nusu mara nilizojaribu 2	Mara nyingi ni nusu ya mara zote nilizojaribu 3	Nilifanikiwa mara nyingi zaidi ya nusu nilizojaribu 4	Karibu mara zote nilifanikiwa 5

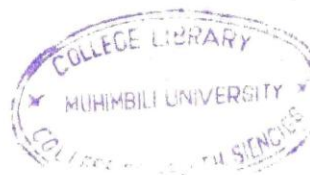
The IIEF-5 Score is the sum of the ordinal response to the five item. Thus, the score can range from 5 to 25. severity categorization of ED: Score 5-10, severe ED; Score 11-15, Moderate ED; Score 16-20, mild ED; Score 21-25, normal (no ED).

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