East African Medical Journal Vol. 96 No. 6 June 2019
SEXUAL DYSFUNCTION IN PATIENTS UNDERGOING NON-SURGICAL MANAGEMENT OF BENIGN PROSTATIC ENLARGEMENT AT THE KENYATTA NATIONAL HOSPITAL
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SEXUAL DYSFUNCTION IN PATIENTS UNDERGOING NON-SURGICAL MANAGEMENT OF BENIGN PROSTATIC ENLARGEMENT AT THE KENYATTA NATIONAL HOSPITAL

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ABSTRACT

Background: **Sexual dysfunction is a major complaint of patients with benign prostatic enlargement. It may result from drugs used for treatment of benign prostatic enlargement, age and lower urinary tract symptoms.**
Study Objective: **To determine the prevalence and associated factors of sexual dysfunction (SD) amongst patients undergoing treatment for benign prostatic enlargement (BPE) at the Kenyatta national hospital (KNH).**
Study design: **Cross sectional study.**
Study setting: **KNH urology clinics.**
Subjects: **80 patients undergoing treatment for benign prostatic enlargement.**
Interventions: **Assessment of erectile dysfunction, lower urinary tract symptoms (LUTS) was done using the international index of erectile function score (IIEF) tool) and international prostatic symptom score (IPSS) respectively. Data collection was done using a pretested structured questionnaire.**
Study results: **The mean age of patients was 68 yrs. Prevalence of erectile dysfunction (ED) was 81%.47.7% had severe ED, and 6.2% had moderate ED, 24.5 % had mild to moderate ED while 21.5 % had mild ED. 61% of patients had moderate lower urinary tract symptoms, while, 35 % had severe lower urinary tract symptoms. Only 4 % had mild symptoms.90% of the patients were on medication while the remaining 10% were not or had not been started on medication for BPH. 3% of the study population had diabetes mellitus, 38% had hypertension, while 13% had both diabetes mellitus and hypertension.**
Conclusion: **Sexual dysfunction in BPE is associated with age, lower urinary tract symptoms, diabetes mellitus, hypertension and medication used in BPE while Prostate size and PSA levels were not associated.**

INTRODUCTION

A correlation between Lower Urinary Tract Symptoms (LUTS) and Sexual Dysfunction (SD) has been demonstrated in men with Benign Prostatic Enlargement (BPE). Both conditions are highly prevalent in men with BPE. The associations between them are independent of age and comorbidities such as diabetes and hypertension (1).

As the prevalence of histological stromal and glandular hyperplasia increases, so does the incidence of LUTS. The rate of sexual dysfunction similarly increases with advancing age (2).

Moreover, in the Multinational Survey of the Ageing Male (MSAM-7), LUTS prevailed at 90%, while the prevalence of SD was 49%, demonstrating that rate of SD was significantly influenced by age and also correlated with LUTS (3).

Sexual dysfunction in BPE can also result from the various medications used for treatment of BPE: each sub set of drugs has a unique set of sexual adverse effects which should be established in our local population to create a good understanding of the side effect profile. The existence of BPE and LUTS impact negatively on the quality of life and are considered a serious socio-economic problem (4). The prevalence of SD is high in these patients and is also strongly related to the severity of the symptoms. It should therefore be considered when treating ageing men with LUTS.

Though largely ignored while evaluating patients with BPE, it is important to establish the magnitude of sexual dysfunction among these patients, its causes and associated factors for a more holistic management. The assessment of sexual disorders therefore helps distinguish whether the BPE is causal or a consequence of the SD or a result of the two (3). The study was set out to establish the prevalence and factors associated with sexual dysfunction among patients undergoing treatment for BPE at the KNH.

MATERIALS AND METHODS

The study was a cross-sectional study and was conducted at the Kenyatta National Hospital (KNH) urology clinics. The KNH is a teaching hospital for the University of Nairobi, Faculty of Medicine and visiting students from other institutions in Kenya. A sample size of 80 participants was arrived at using Krejcie formula. The participants were consecutively enrolled among male patients undergoing treatment between May to August 2019. Patients who had baseline investigations and a confirmed diagnosis and on management for BPE were enrolled into the study after signing an informed consent form.

Permission to conduct the study was sought from the Kenyatta National Hospital – University of Nairobi Ethics Review Committee. The research team underwent a one-day training in basic research principles and the study protocol and tools before commencement of the study. After consenting, a questionnaire, derived from the international index of erectile function (26) and aggregation table, the international prostate symptom scorewas then administered to the study participants. Patients with either abnormal Digital Rectal Exams (DREs) or elevated Prostatic Surface Antigen (PSA) levels underwent prostatic Magnetic Resonance Imaging (MRI) and Prostate Biopsy tests to exclude prostate cancer.

The data from the questionnaires was entered into password protected MS Excel data sheets for cleaning and coding before analysis using the SPSS version 22 software. Continuous data such as age and duration of symptoms were expressed as mean, median and mode, while categorical data such as types of complications were expressed as numbers and percentages of the population.

Bivariate analysis was done to compare the association of the socio demographic factors and the development sexual dysfunction, controlling for factors such as age, comorbidities such as diabetes mellitus and hypertension and type of medication. The Fischer's exact test and Chi Square tests were used to measure the strength of the association, taking a p value of 0.05 to be significant statistically. The findings were presented using tables, pie charts and graphs.

RESULTS

During the study period (May 2019 –August 2019) 80 patients on non-surgical management of BPH at the KNH urology clinics who met the inclusion and exclusion criteria and consented to be included in the study were enrolled and evaluated. Majority of the patients were residents of Nairobi county and Kiambu county. The age distribution was from 50 to 93 years, with a mean age of 68 years, with a majority of the patients (49, 61 %) being within 50-70 years of age group as shown in table 1.

Table 1
Participant's demographics

Characteristics	**N**	**%**
Total (N, %)	80	100
Residence		
Bomet	1	1
Kajiado	5	6
Kericho	1	1
Kiambu	14	18
Kirinyaga	3	4
Kisii	2	3
Kisumu	2	3
Kitui	4	5
Machakos	4	5
Meru	3	4
Muranga	4	5
Nairobi	30	38
Nakuru	2	3
Nyandarua	2	3
Nyeri	3	1

Table 2
Age Characteristics

Age (Mean ǀ SD)	68.26	8.356
Age (Range ǀ Min Max)	50	93
Age Category		
50-70	49	61
71 and above	31	39

The prevalence of ED was 81% (65 out of 80). Of the patients with ED, 47.7% (31) had severe ED, and 6.2% (4) had moderate ED, 24.5 % (16) had mild to moderate ED and 21.5% (14) had mild ED. Prostate sizes in the study population ranged from 19 to 472

grams, with a mean of 78.71. TPSA ranged from 0.04ng/ml to 44 ng/ml with a mean of 5.239ng/ml.

Table 3
Prevalence and features of ED

Prevalence of ED	N	%
ED	65	81
No ED	15	19
Severity of ED		
Severe	31	47.7
Moderate	4	6.2
Mild moderate	16	24.5
Mild	14	21.5

Table 4
Prostate size

Prostate size		
Mean and standard deviation	78.71	81.47
Range (Min| Max)	19.26	472

Table 5
TPSA levels

PSA Level		
Mean and standard deviation	5.239	7.989
Range (Min| Max)	0.004	44.0

Age and erectile dysfunction

With univariate logistic regression, age was significantly associated with erectile dysfunction (p-0.006, Odds Ratio (95% CI) 1.135972 (1.037621 -1.243646)).

Medication and sexual dysfunction

72 patients (90%) of the patients enrolled were on medication for BPH. 8 (10%) of patients were not or had not been started on medication for BPH. (Table 6)

Table 6
Medication for BPH

Whether on medication for BPH	N	%
Yes	72	90
No	8	10

In total, (45) 56% of patients were on 5ARI AB combination therapy, (24) 30% on alpha blockers while (3) 4% were on 5 ARI monotherapy. Majority of the patients at the KNH urology clinics, 35% (28), on medication were on finasteride tamsulosin combination therapy 26% (21) of patients were on tamsulosin monotherapy while 17% (14) were on dutasteride tamsulosin combination therapy. Of the remaining patients 8% (6) were on finasteride monotherapy while 4% (3) were on alfuzosin. The mean duration of medication was 15.9 months. (Table 7/Table 8)

Table 7
Type of Medication

Name of medication	N	%
Alfuzosin	3	4
Dutasteride/tamsulosin	14	17
finasteride	6	8
Finasteride/tamsulosin	28	35
tamsulosin	21	26
None	8	10

Table 8
Groups of Medication

Type of medication	N	%
5-ARI	3	4
Alpha Blocker	24	30
5ARI AB Combination	45	56
None	8	10
Length of time on BPH medication (months)		
Mean ǀstandard deviation	15.90	31.108

Medication for BPH was significantly associated with erectile dysfunction (p-0.0036). Sub-analysis and regression of the individual medication was not possible due to the sample size.

Table 9
Mean SD characteristics by type of medication

Type of medication		Orgasmic function	Erectile function	Sexual desire	Intercourse Satisfaction	Overall satisfaction
None	Mean	5.63	11.38	5.63	5.50	6.00
	n	8	8	8	8	8
	SD	3.815	9.456	1.598	4.957	2.828
Alfuzosin	Mean	7.00	20.67	7.33	10.33	8.67
	N	3	3	3	3	3
	SD	1.732	4.041	1.528	2.082	0.577
Dutasteride/ tamsulosin	Mean	4.29	9.93	5.21	4.36	5.43
	n	14	14	14	14	14
	SD	2.234	6.754	1.626	3.754	1.284
finasteride	Mean	5.33	14.83	4.67	6.17	7.17
	n	6	6	6	6	6
	SD	2.422	10.304	1.506	6.047	0.983
Finosin/ tamsulosin	Mean	3.54	10.43	5.32	4.00	6.00
	n	28	28	28	28	28
	SD	2.835	10.546	2.127	5.157	2.194
tamsulosin	Mean	5.62	14.90	6.19	6.48	6.81
	n	21	21	21	21	21
	SD	2.819	7.974	1.662	4.457	1.887
Total	Mean	4.69	12.33	5.59	5.26	6.30
	n	80	80	80	80	80
	SD	2.893	9.162	1.853	4.815	2.028

The means of the various medications and combinations in regards to the elements of sexual dysfunction were obtained and compared to the population not on medication and the international controls as described by Rosen et al(2).

Patients on alfuzosin were observed to have higher means in terms of orgasmic function (7.00) than the population not on medication (5.63) and Rosen's control group (5.3). They also had better means in terms of erectile function (20.67 vs 11.38 vs 10.7), sexual desire (7.33 vs 5.63 vs 6.3) intercourse satisfaction (10.33 vs 5.50 vs 5.5) and overall satisfaction (8.67 vs 6.00 vs 4.4).

The group on dutasteride tamsulosin combination therapy had lower means in regards to orgasmic function (4.29 vs 5.63 vs 5.3), erectile function (9.93 vs 11.38 vs 10.7), sexual desire (5.21 vs 5.63 vs 6.3) intercourse satisfaction (4.36 vs 5.50 vs 5.5) and overall satisfaction (5.43 vs 6.00 vs 4.4) as compared to patient's not on medication and Rosen's controls.

Patients on finasteride were observed to have lower means in terms of orgasmic function (5.33 vs 5.63 vs 5.3), and sexual desire (4.67 vs 5.63 vs 6.3), but higher means in erectile function (14.83 vs 11.38 vs 10.7), intercourse satisfaction (6.17 vs 5.50 vs 5.5) and overall satisfaction (7.17 vs 6.00 vs 4.4) as compared to patients not on medication and Rosen's controls.

Patients on finasteride/tamsulosin combination therapy were observed to have lower means in terms of orgasmic function (3.54 vs 5.63 vs 5.3), erectile function (10.43 vs 11.38 vs 10.7), sexual desire (5.32 vs 5.63 vs 6.3) intercourse satisfaction (10.33 vs 5.50 vs 5.5) and overall satisfaction (8.67 vs 6.00 vs 4.4) as compared to patients not on medication and Rosen's controls.

Tamsulosin was associated with a lower mean in terms of orgasmic function (5.62 vs 5.63 vs 5.3), but higher means in terms of erectile function (14.90 vs 11.38 vs 10.7), intercourse satisfaction (6.48 vs 5.50 vs 5.5) and overall satisfaction (6.81 vs 6.00 vs 4.4 as compared to patients not on medication and Rosen's controls.

Comorbidities (hypertension and diabetes mellitus) and erectile dysfunction

Of the patients seen at the urology clinic, 48% had neither of the comorbidities being looked at in the study (diabetes mellitus and hypertension).3% of the study population had diabetes mellitus, 38% had hypertension, while 13% had both diabetes mellitus and hypertension.

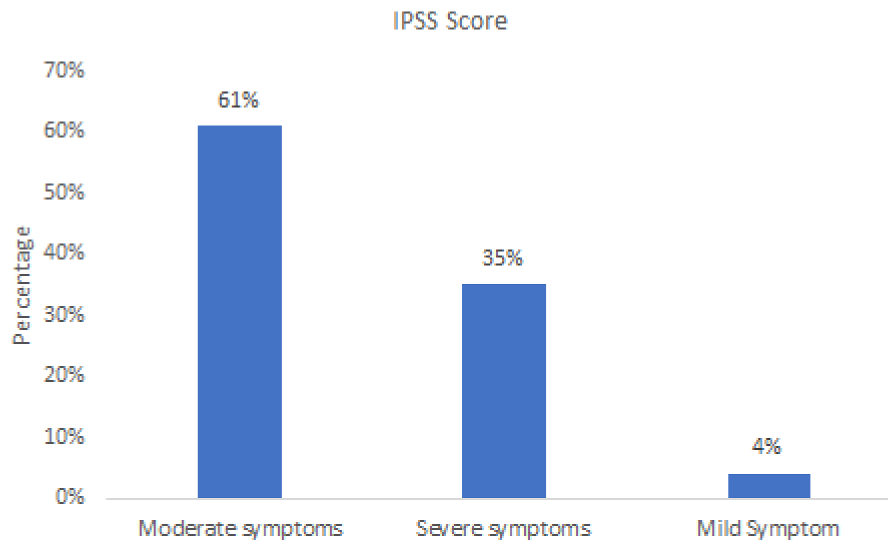
Table 10

Treatment for diabetes mellitus or hypertension	N	%
None	38	48
Diabetes	2	3
Hypertension	30	38
Both DM & HTN	10	13

Presence of diabetes mellitus and hypertension was significantly associated with erectile dysfunction (p-0.029, Odds Ratio (95% CI) 1.925292 (1.069987 -3.464296)

Ipss score and erectile dysfunction

61% (49) of patients had moderate lower urinary tract symptoms, while 35% (28) had severe lower urinary tract symptoms. Only 4% (3) had mild symptoms. (Graph 1)



Graph 1: IPSS score

Presence of moderate and severe lower urinary tract symptoms was associated with erectile dysfunction (p-0.0049, Odds Ratio (95% CI) 1.037167 (0.9476546 -1.135134)

DISCUSSION

Sexual dysfunction is a major complaint of patients undergoing management of benign prostatic hyperplasia being associated with various factors such as increase in age, lower urinary tract symptoms, medication used for BPE apart from being linked independently to similar pathophysiological mechanisms as BPE.

This study aimed to establish the prevalence of erectile dysfunction in patients undergoing non-surgical management of BPE at KNH urology clinics, to establish the risk factors associated with sexual dysfunction and to correlate various risk factors and sexual dysfunction in BPE. The factors looked at in this study were age, diabetes mellitus, hypertension, lower urinary tract symptoms, prostate specific antigen, prostate size and medication used for the routine management of BPE.

The study incorporated 80 patients who were being managed at the urology clinics at Kenyatta national hospital being a single institution prospective cross-sectional study. Majority of the patients were residents of Nairobi county (38%) and Kiambu county (18%) with the rest having even distribution amongst thirteen other counties in the country as shown in table 1. This shows that majority of patients seen at KNH urology clinics are mainly drawn from Nairobi and its neighboring counties and that majority of patients in far flung counties do not access services at KNH with probably happening due to various challenges such as ignorance, distances involved to travel to Nairobi and associated financial implications of the same of which a big part of the country's population cannot afford.

The age of the patients ranged from 50 to 93 years, with a mean age of 68 years. Majority of the patients (61%) were in the 50-70 years old age bracket which in comparison to other international studies namely the Massachusetts ageing male study (40-70 years) and the multinational survey of the ageing male (50-80 years) did not show a big variation in the age group of the subjects showing that similar age groups are affected by both lower urinary tract symptoms and sexual dysfunction.This

further enhanced homogeneity of the compared populations, thus allowing for observation of trends for both similarity and disparity.

The prevalence of ED was 81%, with 15% of patients having no ED with this was found to be significantly higher than previous international studies such as the Massachusetts male ageing study (52%) and the multinational survey of the ageing male (49%).It further demonstrates that the prevalence of ED has been downplayed or under reported and should be an important matter of interest in this population and in patients on management for LUTS and BPE. Of the patients with ED, 47.7% had severe ED, and 6.2% had moderate ED, 24.5 % had mild to moderate ED and 21.5 % had mild ED. This is significantly higher than other studies like Obazee et al (20%) in Nigeria (1) and other international studies like the Massachusetts Male Aging Study (52%)(3) and can be probably explained by the older mean age group and by the fact that majority of the population on this study was on active treatment for symptomatic BPH.

72 patients (90%) were on medication for BPH while 8 (10%) of patients were not or had not been started on medication for BPH. Medication for BPH was found to be positively associated with erectile dysfunction. In total, 56% of patients were on 5ARI AB combination therapy, 30% on alpha blockers while 4% were on 5 ARI monotherapy. Majority of the patients at the KNH urology clinics on medication were on finasteride tamsulosin combination therapy (35%). 26% of patients were on tamsulosin monotherapy while 17% were on dutasteride tamsulosin combination therapy. Of the remaining patients 8% were on finasteride monotherapy while 4% were on alfuzosin. The mean duration of medication was 15.9 months. Sub analysis and regression of the individual medication was not possible due to the sample size. Future studies with bigger sample sizes could be done to address these shortcomings.

Of the patients seen at the urology clinic, 48% had neither of the comorbidities being looked at in the study (diabetes mellitus and hypertension). 3% of the study population had diabetes mellitus, 38% had hypertension, while 13% had both diabetes mellitus and hypertension.

Presence of diabetes mellitus, hypertension or both was associated with erectile dysfunction. This is consistent with various international studies(11)(4).

The other factor looked at was lower urinary tract symptoms. 61% of patients had moderate lower urinary tract symptoms, while 35% had severe lower urinary tract symptoms. Only 4% had mild symptoms. Moderate and severe symptoms were associated with erectile dysfunction. This is consistent and has been demonstrated in previous studies such as The Massachusetts Male Aging Study (11) and the multinational survey of the aging male (MSAM-7)(3).

In this study Prostate size and PSA levels were not associated with sexual dysfunction in BPH in contrast to other studies(10) thus showing a difference in the local population.

Study limitation

1. The IPSS and IIEF proved to be difficult to understand to a significant number of patients who needed close assistance and interpretation. In view of these, versions of these questionnaires in local languages may be of great help.
2. The sample size of this study did not allow for regression and sub analysis for the various medication or groups of medication. A larger series should be done to enable correlation of these medication and various aspects of sexual dysfunction.
3. Sexual health is a taboo subject in our setting and it was a challenge for some patients to have this discussion despite having consented for the study.

CONCLUSION

This study demonstrated that:

a. Sexual dysfunction in BPE is associated with age, lower urinary tract symptoms, diabetes mellitus, hypertension and medication used in BPH.
b. Prostate size and PSA levels were not associated with sexual dysfunction in BPH.

RECOMMENDATIONS

1. Need for complete assessment and documentation while managing patients with BPH especially by internationally approved and standardized questionnaires such as the IPSS and IIEF questionnaires.
2. Paying special attention to the various aspects of sexual dysfunction while balancing this with the patient's symptomatology, to achieve minimal sexual adverse effects and a good quality of life.
3. Given the high prevalence of sexual dysfunction and more particularly erectile dysfunction, it is important to incorporate PDE 5 inhibitors (tadalafil) as part of treatment of LUTS and erectile dysfunction.

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