



## Prevalence and Determinants of Psychiatric Morbidities in Nigerian Men with LUTS Due to Prostatic Diseases

M. U. Dada <sup>1\*</sup>, P. T. Adegun <sup>2</sup>, A. A. Idowu <sup>3</sup>, A. E. Omonisi <sup>4</sup>, L. O. Oluwole <sup>1</sup>  
and A. Obadeji <sup>1</sup>

<sup>1</sup>Department of Psychiatry. Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

<sup>2</sup>Urology Division, Department of Surgery. Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

<sup>3</sup>Department of Chemical Pathology. Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

<sup>4</sup>Department of Anatomic Pathology. Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria.

### Authors' contributions

*This work was carried out in collaboration among all authors. All authors contributed to the conceptualisation, data collection and final writing of the article. Data analysis was done by authors PTA and MUD. All authors read and approved the final manuscript.*

### Article Information

DOI: 10.9734/AJMAH/2021/v19i1030390

#### Editor(s):

(1) Dr. P. Veera Muthumari, V.V.Vanniaperumal College for Women, India.

#### Reviewers:

(1) Yogesh Wasudeo Bhowte, Savitribai Phule Pune University, India.

(2) Samira Rabiei, Shahid Beheshti University of Medical Sciences, Iran.

Complete Peer review History, details of the editor(s), Reviewers and additional Reviewers are available here:

<https://www.sdiarticle5.com/review-history/76306>

Original Research Article

Received 06 September 2021

Accepted 12 November 2021

Published 24 November 2021

### ABSTRACT

**Aims:** This study aimed at determining the prevalence and significant factors associated with psychiatric morbidity in men with LUTS secondary to prostatic diseases in a tertiary health centre in a developing country.

**Study design:** This is a prospective, cross-sectional study.

**Place and duration:** The urology unit of Ekiti State University Teaching Hospital, Ado-Ekiti. Ekiti State, Nigeria. The study period was from 1<sup>st</sup> January 2018 to 31<sup>st</sup> December 2019.

**Methodology:** Hospital Anxiety and Depression Scale (HADS) was used to assess for psychiatric morbidity among 224 patients with LUTS. While, International prostate symptom score (IPSS) was used to assess the severity of LUTS. The data was analysed using SPSS version 20.

**Results:** The prevalence of depression and anxiety were 17% and 9.8% respectively. The mean IPSS and PSA scores of the respondents were 19.95±8.06 and 31.48±37.03 respectively. The only

\*Corresponding author: E-mail: Mobolaji.dada@eksu.edu.ng; bu\_dada@yahoo.com;

factors found to be significantly associated with depression were use of alcohol by the respondents (T-test = .058, P = .01, CI = -2.885 -- -0.391) and high scores on IPSS (T-test = .765, P value = .003, CI = 1.436 -- 6.995). While the factors found to be associated with anxiety disorders were alcohol use by the respondents (T-test =2.661, P = .033, CI = -2.519 -- -0.103) and high PSA scores (T-test =9.473, P value = .036, CI = -28.942 -- -1.068).

**Conclusion:** This study shows that there is a high rate of psychiatric morbidity among patients with LUTS. Main factors associated with these morbidities were alcohol use, severity of the LUTS and high PSA scores. Assessment of psychiatric morbidity in patients with LUTS using simple psychological instruments will help in early detection and prompt treatment of psychological morbidities.

*Keywords: Anxiety; depression; psychological morbidity; prostate; urinary tract obstruction.*

## ABBREVIATIONS

*HADS : Hospital Anxiety and Depression Scale*

*IPSS : International Prostate Symptoms Score*

*LUTS : Lower urinary tract symptoms*

*QOL :Quality of life*

## 1. INTRODUCTION

Certain studies have demonstrated an independent association between the development of Lower Urinary Tract Symptoms (LUTS), depression and anxiety in men [1–3]. The association has been linked to systemic inflammation (C-reactive protein (CRP), interleukin-6 (IL-6), and tumor necrosis factor alpha (TNF- $\alpha$ ) in ageing men [4]. LUTS have stigmatized many men and affected their masculine identity, resulting in internalization of negative self-worth and low self-esteem [5–7]. The impact on their spouses, such as insomnia and reducing sexual and marital satisfaction, has also been very challenging [8].

LUTS due to cancer of the prostate and benign prostatic hypertrophy (BPH) have been found to be significantly associated with increased depression or anxiety by some researchers [9,10]. Varying prevalence rates of anxiety and depression ranging from 4-22% were reported by these researchers among patients with LUTS [11,12]. LUTS acting as stressors could reduce ones' coping self-efficacy. Such individuals may be limited in their social activities outside of the home and could develop a restricted and isolated lifestyle [13]. Embarrassment and shame related to incontinence can lead to a poor self-concept and a lower sense of self-control [14,15]. Thus, individuals distressed by these problems may have poorer coping resources and coping capacity and thus, a lower coping self-efficacy.

The aim of this study was to determine the prevalence and significant factors associated with psychiatric morbidities in men with LUTS secondary to prostatic diseases in a tertiary health centre in a developing country.

## 2. MATERIALS AND METHODS

This was a cross-sectional, prospective and hospital-based study. Inclusion criteria were men aged  $\geq 40$  years, presenting with LUTS to the urology clinic of Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria and had the ability to read English or came with a relation who was literate.

Exclusion criteria included failure to consent to be included in the study and those that were too ill to participate in the study.

All subjects were requested to complete a structured self-questionnaire to collect information about depressive and anxiety symptoms, LUTS status, current medical conditions, medications, alcohol consumption and smoking.

### 2.1 Outcome Measures

#### 2.1.1 LUTS

International prostate symptom score (IPSS) was used to assess the severity of LUTS. The IPSS is composed of 7 questions ranging from 0 to 5 points each so that the total scores can be in 0-35 range (16). Severity of LUTS was classified as none to mild (0-7), moderate (8-19), or severe (20-35) using standard cut-off of IPSS.

#### 2.1.2 Depression and anxiety

Hospital Anxiety and Depression Scale (HADS) was used to assess for anxiety and depression

among the patients. A total score for both anxiety and depression classified as normal, 0-7, borderline abnormal, 8-10, or abnormal, 11-21.

### 3. RESULTS AND DISCUSSION

A total of 224 patients with LUTS were recruited for the study. The mean age of the patients was  $68.43 \pm 10.54$  years. Most (92.0%) of the patients were married. Only one patient (0.4%) had a previous psychiatric history while 5.8% of the respondents had family history of psychiatric illness.

About a third of the respondents (31.2%) never consumed alcohol in the past while others were lifetime users (current, ex drinker and others). More than two thirds (68.8%) of the respondents never smoked cigarettes. BPH accounted for more than two thirds (68.8%) of the patients with LUTS due to prostate problems.

Almost half of the respondents (48.2%) presented to the hospital within 1 year of onset of LUTS. More than half of the respondents (52.2%) had a co morbid medical illness such as hypertension and diabetes. Hypertension however accounted for most (73.2%) of these co morbidities. (Table 1).

The prevalence of depression and anxiety were 17% and 9.8% respectively. The mean IPSS and PSA scores of the respondents were  $19.95 \pm 8.06$  and  $31.48 \pm 37.03$  respectively (Table 2). The only factors found to be significantly associated with depression were use of alcohol by the respondents (T-test = .058, P = .01, CI = -2.885 – -0.391) and high scores on IPSS (T-test = .765, P value = .003, CI = 1.436 – 6.995). While the factors found to be associated with anxiety disorders were alcohol use by the respondents (T-test = 2.661, P = .03, CI = -2.519 – -0.103) and high PSA scores (T-test = 9.473, P value = .04, CI = -28.942 – -1.068).

This study analyzed the association between LUTS and anxiety and depression among outpatients in a tertiary health centre. This study observed a prevalence of 17% for depression and 9.8% for anxiety disorder. Much lower prevalence rates of 4.98% for depression were reported by Jeong et al [11]. Others have reported prevalence rates as high as 22-29% for depression [12,17]. Much higher prevalence rates were reported in a study among patients with prostate cancer, the authors found a prevalence rate of depression to be about 43.5%

[17]. The association between depression and LUTS was also established in a research among Taiwanese population with BPH. Depression was being diagnosed about 1.87 times more frequently than in a comparable cohort of men without BPH [18].

Prevalence between 1% and 20% were reported for anxiety disorders by other authors among patients with LUTS [19]. Possible explanation for this high rate of anxiety disorder could be fear being experienced by these patients about the outcome of the illness causing the LUTS and also fear of possible outcome of surgical interventions among those scheduled for such.

Various theories suggesting bidirectional causation have been proposed for the high prevalence of psychological morbidity among patients with LUTS. One of such was proposed by Steers et al [20]. They postulated that a defect in serotonin synthesis is associated with the development of depression and abnormal voiding dysfunction. Others hypothesized that increased adrenergic tone and the hypothalamic-pituitary axis mediated depression in LUTS [20,21]. Furthermore, Klausner & Steers suggested that stress-induced depression activates the corticotropin-releasing factor pathway, which functions as a mediator of emotional influences on bladder function [22]. Inflammation has also been suggested to represent a common mechanism in the pathogenesis of major depression and LUTS as patients with depression frequently exhibit increased levels of C-reactive protein, tumor necrosis factor- $\alpha$ , and interleukin-6 [4,23]. Also, psychosocial factors have also been proposed to contribute to developing of depression among these patients. For instance, embarrassment and shame related to incontinence can lead to a poor self-concept and a lower sense of self confidence and poor quality of life [5,14,15,24].

The significant factors found to be associated with depression among patients with LUTS in this study were use of alcohol and high IPSS score which signified severity of LUTS. Similar positive correlation between depressive symptoms and LUTS severity were reported by other authors [11,12]. Also, Similar findings on alcohol as a factor in depression among LUTS patients were obtained previously by other researchers. It was shown that alcohol consumption increases the risk of developing depression [12,25,26].

The significant factors found to be associated with anxiety disorder among patients with LUTS in this study were use of alcohol and high PSA score. Other researchers had also reported higher prevalence of anxiety disorders among patients with LUTs who consumed alcohol

compared to non drinkers. [27] It is not surprising that those with high PSA scores had higher levels of anxiety. This may be because the patients become very fearful that perhaps they have developed a cancer which definitely to them may mean that death is near.

**Table 1. sociodemographic and clinical variables of respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Marital status		
Married	206	92.0
Separated/divorced	3	1.2
Widowed	15	6.8
Previous Psychiatric history		
No	223	99.6
YES	1	0.4
Family hx of psych illness		
None	211	94.2
Yes	13	5.8
Diagnosis		
BPH	154	68.8
PC	70	31.2
Alcohol use		
Never	71	31.7
Regular use	26	11.6
Occasional use	25	11.2
Ex user	87	38.8
Smoking		
Nonsmoker	154	68.8
Regular	6	2.7
Ex-smoker	51	22.8
Duration of LUTS		
<1 yr	108	48.2
1-3yrs	62	27.7
3-5yrs	22	9.8
>5yrs	19	8.5
Co morbidity		
Yes	112	52.8
No	100	47.2
Co morbidity type		
Hypertension	82	36.6
Diabetes	17	7.6
Others	13	5.8
Severity of depression		
None	146	66.5
Borderline	37	16.5
Case	38	17.0
Severity of anxiety disorder		
None	177	79.0
Borderline	25	11.2
Case	22	9.8

**Table 2. Mean values of variables**

Variable	Mean	Standard deviation
Age	68.43	10.54
Ipss	19.95	8.06
Anxiety disorder	4.29	4.30
Depression	6.15	4.46
Psa	31.48	37.03

**Table 3. Association between depression and various factors**

Variable	Test statistics	P value	CI
Age	T-test = 0.025	.331	-1.872 - 5.529
Marital status	T-test = 2.354	.971	-2.1263 - 2.205
Occupation	$\chi^2 = 0.757$	.446	-4.276 - 1.746
Alcohol use	T-test = 0.058	0.010*	-2.885 - -0.391
Smoking	T-test = 0.029	0.124	-2.2543 -0.272
Diagnosis	T-test = 0.014	.06	-1.033 -0.427
IPSS	T-test = 0.765	.003*	1.436 -6.995
PSA	T-test = 0.953	.717	-18.769 -12.942
Co morbidity	$\chi^2 = 0.468$	.294	-8.056 -3.724

\*significant

**Table 4. Association between anxiety disorder and various factors**

Variable	Test statistics	P value	Ci
Age	T-test = 1.403	.232	-7.852 - 1.865
Marital status	T-test = 0.035	.881	-1.851 - 2.523
Occupation	$\chi^2 = 0.878$	.427	-2.375 - 1.296
Alcohol use	T-test = 2.661	.033*	-2.519 - -0.103
Smoking	T-test = 0.291	.289	-1.880 - 0.563
Diagnosis	T-test = 1.258	.965	-0.562 - 1.518
IPSS	T-test = 0.056	.502	-2.697 - 5.132
PSA	T-test = 9.473	.036*	-28.942 - -1.068
Co morbidity	$\chi^2 = 0.790$	.486	-3.642 - 1.926

\*significant

#### 4. CONCLUSION

This study shows that there is a high rate of psychiatric morbidity among patients with LUTS. Main factors associated with these morbidities were alcohol use, severity of the LUTS and high PSA score. Assessment of depression and anxiety disorders in patients with LUTS using simple psychological instruments will help in early detection and prompt treatment of psychological morbidities, thereby ensuring better quality of life for the patients.

#### CONSENT

Written informed consent of the patients was obtained before they were included in the study. Those who declined consent were not victimized in any way.

#### ETHICAL APPROVAL

The study was performed in compliance with the principles of the Declaration of Helsinki, Good Clinical Practice and the World Association for Social, Opinion and Market Research (ESOMAR) guidelines.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Chung RY, Leung JCS, Chan DCC, Woo J, Wong CKM, Wong SYS. Lower Urinary Tract Symptoms (LUTS) as a Risk Factor for Depressive Symptoms in Elderly Men: Results from a Large Prospective Study in

- Southern Chinese Men. PLOS ONE. 2013;8(9):e76017.
2. Kupelian V, McVary KT, Kaplan SA, Hall SA, Link CL, Aiyer LP, et al. Association of lower urinary tract symptoms and the metabolic syndrome. Results from the Boston Area Community Health (BACH) Survey. *J Urol*. 2009;182(2):616–25.
  3. Milsom I, Kaplan SA, Coyne KS, Sexton CC, Kopp ZS. Effect of bothersome overactive bladder symptoms on health-related quality of life, anxiety, depression, and treatment seeking in the United States: results from EpiLUTS. *Urology*. 2012;80(1):90–6.
  4. Hung S-F, Chung S-D, Kuo H-C. Increased Serum C-Reactive Protein Level Is Associated with Increased Storage Lower Urinary Tract Symptoms in Men with Benign Prostatic Hyperplasia. PLOS ONE. 2014;9(1):e85588.
  5. Elstad EA, Taubenberger SP, Botelho EM, Tennstedt SL. Beyond incontinence: the stigma of other urinary symptoms. *J Adv Nurs*. 2010;66(11):2460–70.
  6. Suen LKP, Cheng HL, Yeung SKW, Au-Yeung CH, Lee JCY, Ho KKY, et al. Qualitative insights into the experiences of living with moderate-to-severe lower urinary tract symptoms among community-dwelling ageing males. 2017 [cited 2021 Oct 3]; Available:<http://ira.lib.polyu.edu.hk/handle/10397/79838>
  7. Wong SYS, Hong A, Leung J, Kwok T, Leung PC, Woo J. Lower urinary tract symptoms and depressive symptoms in elderly men. *J Affect Disord*. 2006 ;96(1–2):83–8.
  8. Nilsson M, Lalos O, Lindkvist H, Lalos A. Impact of female urinary incontinence and urgency on women’s and their partners’ sexual life. *Neurourol Urodyn*. 2011;30(7):1276–80.
  9. Coyne KS, Wein AJ, Tubaro A, Sexton CC, Thompson CL, Kopp ZS, et al. The burden of lower urinary tract symptoms: evaluating the effect of LUTS on health-related quality of life, anxiety and depression: EpiLUTS. *BJU Int*. 2009;103 Suppl 3:4–11.
  10. Temi AP, Usman DM, Ademola I, Emmanuel OA, Olutoyin OL, Adetunji O. Pre-treatment Depression and Anxiety Disorder in Men with Cancer of the Prostate in South Western Nigeria. *INDJ*. 2021;46–53.
  11. Jeong WS, Choi HY, Nam JW, Kim SA, Choi BY, Moon HS, et al. Men With Severe Lower Urinary Tract Symptoms Are at Increased Risk of Depression. *Int Neurourol J*. 2015;19(4):286–92.
  12. Pietrzyk B, Olszanecka-Glinianowicz M, Owczarek A, Gabryelewicz T, Almgren-Rachtan A, Praisner A, et al. Depressive symptoms in patients diagnosed with benign prostatic hyperplasia. *Int Urol Nephrol*. 2015;47(3):431–40.
  13. Fowler FJ, Barry MJ, Lu-Yao G, Wasson J, Roman A, Wennberg J. Effect of radical prostatectomy for prostate cancer on patient quality of life: results from a Medicare survey. *Urology*. 1995;45(6):1007–13; discussion 1013-1015.
  14. Harris JL. Treatment of postprostatectomy urinary incontinence with behavioral methods. *Clin Nurse Spec*. 1997;11(4):159–66.
  15. Nicolson P, Kopp Z, Chapple CR, Kelleher C. It’s just the worry about not being able to control it! A qualitative study of living with overactive bladder. *Br J Health Psychol*. 2008;13(Pt 2):343–59.
  16. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Urology*. 2003;61(1):37–49.
  17. Zhang W, Cao G, Sun Y, Wu F, Wang Q, Xu T, et al. Depressive symptoms in individuals diagnosed with lower urinary tract symptoms suggestive of benign prostatic hyperplasia (LUTS/BPH) in middle-aged and older Chinese individuals: Results from the China Health and Retirement Longitudinal Study. *Journal of Affective Disorders [Internet]*. 2021 Sep 20 [cited 2021 Sep 29]; Available:<https://www.sciencedirect.com/science/article/pii/S0165032721010041>
  18. Huang C-Y, Chiu K-M, Chung S-D, Keller JJ, Huang C-C, Lin H-C. Increased risk of depressive disorder following the diagnosis of benign prostatic enlargement: one-year follow-up study. *J Affect Disord*. 2011;135(1–3):395–9.
  19. Özen MA, Mutluer T, Necef I, Shabsog M, Taşdemir M, Bilge I, et al. The overlooked association between lower urinary tract dysfunction and psychiatric disorders: a

- short screening test for clinical practice. *J Pediatr Urol.* 2019;15(4):332.e1-332.e5.
20. Steers et al. Overactive bladder, urge incontinence and emotional disorders. 2008;(27):137\_147.
  21. Laumann EO, Kang J, Glasser DB, Rosen RC, Carson CC. Lower urinary tract symptoms are associated with depressive symptoms in white, black and Hispanic men in the United States. *J Urol.* 2008;180(1):233–40.
  22. Klausner AP, Steers WD. Corticotropin releasing factor: a mediator of emotional influences on bladder function. *J Urol.* 2004;172(6 Pt 2):2570–3.
  23. Miller AH, Maletic V, Raison CL. Inflammation and Its Discontents: The Role of Cytokines in the Pathophysiology of Major Depression. *Biol Psychiatry.* 2009;65(9):732–41.
  24. Dunphy C, Laor L, Te A, Kaplan S, Chughtai B. Relationship Between Depression and Lower Urinary Tract Symptoms Secondary to Benign Prostatic Hyperplasia. *Rev Urol.* 2015;17(2):51–7.
  25. Boden JM, Fergusson DM. Alcohol and depression. *Addiction.* 2011;106(5):906–14.
  26. Coêlho BM, Andrade LH, Guarniero FB, Wang Y-P. The influence of the comorbidity between depression and alcohol use disorder on suicidal behaviors in the São Paulo Epidemiologic Catchment Area Study, Brazil. *Braz J Psychiatry.* 2010;32(4):396–408.
  27. Uluocak N, Kulu M, Acar O, Atilgan D, Parlaktas BS, Kilic S, et al. Is There A Relationship Between Alcohol/Drug Abuse And Luts/Ed? 2016 [cited 2021 Oct 5]; Available:<http://earsiv.gop.edu.tr/xmlui/handle/20.500.12881/4560>

© 2021 Dada et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:*  
<https://www.sdiarticle5.com/review-history/76306>