Jambura Medical and Health Science Journal, Vol.3 No.2 (August 2024)
p-ISSN 2830-0580 | e-ISSN 2830-4608

ORIGINAL ARTICLE **Open Access**

Characteristics of Lower Urinary Tract Symptoms (LUTS) in the Chronic Disease Management Program (Program Pengelolaan Penyakit Kronis, PROLANIS) Patients: A Pilot Study in Gorontalo Province

Sri A Ibrahim[1], Abdi Dzul Ikram Hasanuddin[2,*]

[1]Department of Public Health, Faculty of Medicine, Universitas Negeri Gorontalo, Gorontalo City, Indonesia
[2]Department of Histology, Faculty of Medicine, Universitas Negeri Gorontalo, Gorontalo City, Indonesia

*Corresponding Author. Email: ikramhasanuddin@ung.ac.id, Telp: +6285233215280

ABSTRACT

Introduction: Lower Urinary Tract Symptoms (LUTS) are common in older adults and significantly impact individuals, caregivers, and the broader healthcare system. As the elderly population with various comorbidities increases, the burden of LUTS will increase. The chronic disease management program (Program Pengelolaan Penyakit Kronis, PROLANIS) is a government program generally followed by the elderly. This study aims to describe the characteristics of LUTS in PROLANIS patients in Gorontalo Province.
Method: The analytical observational study design, using a cross-sectional approach, was conducted on PROLANIS patients living in rural and urban areas in Gorontalo Province is between July - October 2023. An incidental sampling technique was conducted on eligible patients and areas. LUTS symptoms were measured using the International Prostate Symptom Score (IPSS) questionnaire and categorized into mild, moderate, and severe. LUTS symptoms were considered significant if the IPSS score was ≥8.
Results: Of the 52 participants, 38.50% experienced significant LUTS symptoms. The majority of symptoms felt were nocturia (score two, as many as 23.10%) and mild symptoms (53.80%). Geographical differences, gender, education level, and age were not associated with LUTS symptoms ($p > 0.10$).
Conclusion: The prevalence of LUTS in patients undergoing PROLANIS is relatively high. The majority of LUTS patients have mild symptoms, with nocturia being the most common complaint compared to other symptoms. Further studies with a larger sample size and involving multiple sites are needed to obtain a more valid description of the characteristics of LUTS epidemiology in the PROLANIS population.

Keywords: Aged, disease managemen, lower urinary tract symptoms, nocturia

JMHSJ Jambura Medical and Health Science Journal

Published by:
Universitas Negeri Gorontalo

Address:
Jl. Jend. Sudirman No.6, Gorontalo City, Gorontalo, Indonesia

Mobile number:
+62852 3321 5280

Email:
jmhsj@ung.ac.id

Article History:
Received 21 July 2024
Accepted 30 July 2024
Published 31 July 2024
DOI:
https://doi.org/10.37905/jmhsj.v3i2.27206

Introduction

Lower urinary tract symptoms (LUTS) represent a prevalent clinical concern among the elderly population, exerting significant impacts on patients, caregivers, and the healthcare infrastructure at large. With demographic shifts favoring an aging population characterized by an increasing prevalence of multiple chronic diseases, the incidence and associated healthcare burden of LUTS are projected to rise notably. The European Association of Urology (EAU), alongside the American Urological Association (AUA) categorically delineates LUTS into storage (irritative) symptoms, including daytime frequency, urgency, and nocturia; voiding (obstructive) symptoms, featuring straining, weak stream, intermittency, incompleteness of flow and voiding; and postmicturition symptoms such as postmicturition dribbling, all of which cumulatively afflict the lower urinary tract.[1]

Lower urinary tract symptoms are classified into storage and voiding categories initially delineated by the International Continence Society (ICS). This framework was further refined in 2002 when the ICS expanded the classification to include a novel category — post-micturition symptoms, thereby providing a more comprehensive understanding of LUTS.[2,3]

The etiological contributors to LUTS are multifaceted and intricate. The elevated prevalence of LUTS correlates significantly with the surge in degenerative pathologies that predispose individuals to LUTS complications. Notable among these are benign prostatic hyperplasia (BPH), diabetes mellitus (DM), obesity, and hypertension, in addition to socio-psychological determinants including educational attainment and socioeconomic status.[4] Furthermore, while the concurrent increase in the incidences of LUTS and hypertension with advancing age is observed, the causative linkage between these two conditions has historically been underexplored.[5]

Through their effects on the detrusor muscle and urinary sphincter function, several categories of prescription drugs can worsen LUTS, including antidepressants, antihistamines, bronchodilators, anticholinergics, sympathomimetics, and diuretics. Diuretics disrupt fluid volume balance and are increasingly used in elderly patients, contributing to the development of LUTS. The prevalence of these medications increases with age, contributing to the increase in age-related LUTS.[6]

The Chronic Disease Management Program (Program Pengelolaan Penyakit Kronis, PROLANIS), which is generally followed by the elderly population, is a health service and proactive approach that is implemented in an integrated manner involving participants and health facilities in order to maintain health in patients with chronic diseases (especially hypertension and type 2 diabetes) to achieve optimal quality of life. PROLANIS activities

include preventing ongoing complications and improving public health, including medical consultation activities, PROLANIS clubs, home visits, and health screening.[7] On the one hand, LUTS dramatically affects a person's quality of life, including PROLANIS patients with various comorbidities.[8] Therefore, this study aims to describe the characteristics of LUTS sufferers in patients who follow PROLANIS. The results of this study can be used as a basis by PROLANIS managers in screening and following up on LUTS symptoms in the patients they manage so that it can help improve their quality of life.

Methods

This research will be conducted in two different Community Health Centers in Gorontalo Province, each representing the characteristics of rural and urban areas, namely Bulango Ulu Community Health Center and Kota Tengah Community Health Center. The research implementation time is in July - October 2023. This study used an analytical observation research design with a cross-sectional approach.

The population of this study was all PROLANIS patients registered in both health centers, totaling 100 people. The sampling technique used in the present study was accidental sampling. The minimum sample size was calculated based on the Harry-King normogram. Based on a 90% confidence level, the minimum sample size was 35% of the total 100 people, which was 35 respondents.

The LUTS variable is defined as a set of lower urinary tract symptoms experienced by PROLANIS patients. The international Prostate Symptom Score (IPSS) questionnaire was used to assess LUTS symptoms in Indonesian and has been previously validated by Monoarfa and Mochtar.[9] Data collection was carried out directly by visiting the health center during the PROLANIS activity, and all respondents were accompanied during the questionnaire filling process. Respondents were categorized as LUTS sufferers if they got an IPSS score ≥ 8.

Upon completion of data acquisition, the subsequent phase entails processing the acquired data utilizing SPSS statistical software, version 13.0, compatible with the Windows operating system. The data encapsulating the prevalence of LUTS were articulated as percentages and delineated according to their specific attributes. The discrepancy in the distribution of attributes among individuals afflicted with LUTS versus those unafflicted is evaluated through the employment of the Chi-Square or Fisher's Exact Test, depending on the suitability of the dataset's characteristics. Concurrently, the Mann-Whitney U test is deployed to analyze disparities in the median values of quantitative attributes between the two aforementioned groups. A p-value threshold of less than 0.10 is adopted to denote statistical significance.

Result

The study was conducted at two Community Health Centers in the Gorontalo region, representing the characteristics of urban areas (Puskesmas Kota Tengah) and rural areas (Puskesmas Bulango Ulu). In the initial screening, the total number of study participants was 52 people, consisting of 24 people at Puskesmas Kota Tengah and 28 at Puskesmas Bulango Ulu. All respondents completed the IPSS questionnaire, so no data was excluded.

The characteristics of the study participants, in general, can be seen in Table 1. Most participants came from rural areas, were female, and had an elementary school education or equivalent. The study participants had an average age of 57 years, with the lowest age being 23 years and the highest age being 81 years. The prevalence of significant LUTS symptoms (IPSS score >7) in PROLANIS patients in this study was 38.50%, with the majority in the mild symptom category followed by moderate and severe symptoms.

Table 1. Baseline characteristics of study participant

Parameter	Frequency (n)	Percentage (%)
Origin of Puskesmas		
Kota Tengah (Urban Area)	24	46.20
Bulango Ulu (Rural Area)	28	53.80
Gender		
Male	14	26.90
Female	38	73.10
Educational Level		
Elementary School	26	50.00
Junior High School	5	9.60
Senior High School	10	19.20
Higher Education	11	21.20
Age (years)[a]	57.12 ± 13.69	
Significant LUTS		
Present	20	38.50
Absent	32	61.50
LUTS Severity		
Normal	4	7.70
Mild	28	53.80
Moderate	14	26.90
Severe	6	11.50
Total	**52**	**100**

[a]Mean±standard deviation
LUTS: Lower urinary tract symptoms

The characteristics of LUTS scoring based on each symptom can be seen in Table 2. This study's median total IPSS score was 6, with the lowest total score of 0 and the highest of 27. Most participants were classified as having a score of 0 in all categories of LUTS

symptoms except for nocturia symptoms. In nocturia symptoms, most participants were classified as having a score of 2, followed by a score of 5, a score of 1, and a score of 0. In this study, the quality of life-related to LUTS symptoms in PROLANIS patients had a median value of 1, with the lowest score being 0 and maximum scores of 6.

Table 2. Detailed characteristics of LUTS in the study participants

IPSS Parameter	Score 0		Score 1		Score 2		Score 3		Score 4		Score 5	
	n	%	n	%	n	%	n	%	n	%	n	%
Total Score[a]	6 (0-27)											
Score at Each Symptom (N=52)												
Incomplete emptying	25	48.10	4	7.70	1	1.90	9	17.30	3	5.80	10	19.20
Urinary frequency	17	32.70	11	21.20	2	3.80	8	15.40	8	15.40	6	11.50
Urinary intermittency	42	80.80	1	1.90	3	5.80	2	3.80	1	1.90	3	5.80
Urinary urgency	41	78.80	1	1.90	4	7.70	4	7.70	0	0.00	2	3.80
Weak stream	40	76.90	4	7.70	1	1.90	5	9.60	1	1.90	1	1.90
Straining	41	78.80	2	3.80	2	3.80	7	13.50	0	0.00	0	0.00
Nocturia	9	17.30	9	17.30	12	23.10	5	9.60	6	11.50	11	21.20
Quality of life scores[a]	1 (0-6)											

[a]Median (Min-Max)
LUTS: Lower urinary tract symptoms

Differences in demographic characteristics based on significant LUTS symptoms experienced by participants can be seen in Table 3. Both groups classified as not experiencing and experiencing significant LUTS symptoms had similar characteristics regarding region of origin, gender, education level, and age.

Discussion

The prevalence of significant LUTS symptoms in this study was 38.50%. This is relatively higher than previous studies that found the prevalence rate of LUTS around 20% .[8,10] Compared to the results of studies in Japan, the prevalence rate obtained in this study is relatively lower. Of the 6,210 participants, it was reported that 77.90% of subjects aged ≥20 years suffered from LUTS. On the other hand, 82.50% of subjects aged ≥40 years suffered from LUTS in the study.[11] Another study also found similar results, where the prevalence of LUTS was 69.80% in Poland.[12] This difference in prevalence could be due to the way LUTS symptoms were interpreted. When the study reported only significant LUTS symptoms

(IPSS score ≥8), the reported prevalence was relatively lower.[8,13] Conversely, when the study reported existing LUTS symptoms without considering the threshold of significant score, the reported prevalence was relatively higher.[8]

Table 3. Relationship between demographic characteristics and LUTS

Characteristics	Significant LUTS				p-value
	Present (N=20)		Absent (N=32)		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Origin of Puskesmas (N=52)					
Kota Tengah (Urban Area)	9	17.31	15	28.85	0.895[b]
Bulango Ulu (Rural Area)	11	21.15	17	32.69	
Gender (N=52)					
Male	5	9.62	9	17.31	0.805[b]
Female	15	28.85	23	44.23	
Educational Level (N=52)					
Elementary School	10	19.23	16	30.77	0.922[c]
Junior High School	2	3.85	3	5.77	
Senior High School	3	5.77	7	13.46	
Higher Education	5	9.62	6	11.54	
Age (years)[a]	54.05 ± 14.45		59.03 ± 13.05		0.205[d]

[a]Mean±standard deviation [b]Chi-Square test [c]Fisher-Exact tesr [d] Independent T test

The present study indicates a predominance of mild symptoms of LUTS among the respondents, who were participants in the PROLANIS program, primarily afflicted with chronic conditions including hypertension, diabetes mellitus, dyslipidemia, and cardiac diseases. It was observed that the focus of these individuals predominantly lay on the management and monitoring of their pre-existing chronic diseases, consequently sidelining the attention towards LUTS symptoms.[14] This observation aligns with prior research findings indicating that individuals suffering from LUTS frequently neglect the mild symptoms experienced, delaying the pursuit of medical intervention until the symptoms coexist with multiple comorbidities and significantly impair quality of life.[8,14]

The most common LUTS symptom experienced by respondents in the recent study

was nocturia. Other symptoms were mostly at a score of 0. In addition, respondents generally did not feel that their quality of life was disturbed by these LUTS symptoms. These results are different from previous studies when compared with the characteristics of women who predominantly suffered from LUTS in this study. Mitsui et al. (2024) found that urgency and stress urinary incontinence were the most common complaints of women with LUTS.[11] Likewise, a study by Przydacz et al. (2020) reported that women with LUTS mostly complained of urinary incontinence of any type.[12]

Geographical differences (urban vs. rural), gender, education level, and age were not associated with LUTS symptoms in this study. In general, LUTS can be caused by many factors, such as drug consumption, age factors, gender, and diseases that can cause LUTS.[1] Geographical differences were also found to be unrelated to LUTS symptoms. In addition, the difference in proportion between men and women was also relatively small.[12] Education level was also not associated with LUTS symptoms.[8] As for age, the present study had discrepancies from the other studies, which found an increasing trend in the prevalence of LUTS with increasing age.[12,15]

This study has several limitations. The pilot project study design had a relatively small sample for a descriptive study. Therefore, further research with a larger sample and multisite is needed to obtain a more convincing description. In addition, other factors such as comorbidities, medical history, and certain medications have yet to be explored, even though these factors may play a role in the prevalence of LUTS in this study.

Conclusion

The prevalence of LUTS in the patient population undergoing PROLANIS is quite high. The majority of symptoms experienced are nocturia and are mild symptoms. Geographical differences, gender, education level, and age are not related to LUTS symptoms.

Conflicts of Interest

Nothing to declare

Funding sources

Nothing to declare

Acknowledgments

The authors acknowledge the Department of Histology, Faculty of Medicine Universitas Negeri Gorontalo who have participated conducting this research.

References

1. Nishii H. A Review of Aging and the Lower Urinary Tract: The Future of Urology. *Int Neurourol J.* 2021;25(4):273-284.
2. Tran LN, Puckett Y. Urinary Incontinence. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK559095/
3. Drake MJ. Fundamentals of Terminology in Lower Urinary Tract Function. *Neurol Urodynam J* 2018; 37(S6):S13-S19.
4. Coyne KS, Sexton CC, Thompson CL, Milsom I, Irwin D, Kopp ZS, Chapple CR, Kaplan S, Tubaro A, Aiyer LP, Wein AJ. The prevalence of lower urinary tract symptoms (LUTS) in the USA, the UK and Sweden: results from the Epidemiology of LUTS (EpiLUTS) study. *BJU Int.* 2009;104(3):352-60.
5. Huang CY, Chung SD, Kao LT, Lin HC, Wang LH. Statin Use Is Associated with Bladder Pain Syndrome/Interstitial Cystitis: A Population-Based Case-Control Study. *Urol. Int.* 2015; 95:227–232.
6. Wuerstle MC, Van Den Eeden SK, Poon KT, Quinn VP, Hollingsworth JM, Loo RK, Jacobsen SJ. Urologic Diseases in America Project. Contribution of common medications to lower urinary tract symptoms in men. *Arch Intern Med.* 2011;171(18):1680-2.
7. BPJS Kesehatan. Panduan Praktis PROLANIS (Program Pengelolaan Penyakit Kronis). Jakarta: BPJS Kesehatan; 2015.
8. Isa NMM, Aziz AFA. Lower Urinary Tract Symptoms: Prevalence and Factors Associated with Help-Seeking in Male Primary Care Attendees. *Korean J Fam Med.* 2020;41(4):256-262.
9. Monoarfa RA, Mochtar CA. Validation of Indonesan Vesion of IPSS. *Indonesian J Urol* 2014; 21(1):15-19.
10. Nnabugwu II, Ugwumba FO, Udeh EI, Anyimba SK, Okolie LT. The relationship between prevalence and severity of lower urinary tract symptoms (LUTS), and body mass index and mid-abdominal circumference in men in a resource-poor community in Southeast Nigeria: a cross-sectional survey. *BMC Urol.* 2019;19(1):15.
11. Mitsui T, Sekido N, Masumori N, Haga N, Omae K, Saito M, Kubota Y, Sakakibara R, Yoshida M, Takahashi S. Prevalence and impact on daily life of lower urinary tract symptoms in Japan: Results of the 2023 Japan Community Health Survey (JaCS 2023).

Int J Urol. 2024;31(7):747-754.

12. Przydacz M, Golabek T, Dudek P, Lipinski M, Chlosta P. Prevalence and bother of lower urinary tract symptoms and overactive bladder in Poland, an Eastern European Study. *Sci Rep.* 2020;10(1):19819.
13. Mohamad Anuar MF, Solihin Rezali M, Mohamed Daud MA, Ismail SB. A community-based study on lower urinary tract symptoms in Malaysian males aged 40 years and above. *Sci Rep* 2022; 12:2345.
14. Al Dandan HB, Galvin R, McClurg D, Coote S. Management strategies for lower urinary tract symptoms (LUTS) among people with multiple sclerosis (MS): a qualitative study of the perspectives of people with MS and healthcare professionals. *HRB Open Res.* 2019;2:31.
15. Jeong JB, Lee JH, Choo MS, Ahn DW, Kim SH, Lee DS, Cho MC, Son H, Jeong H, Yoo S. Association between life-style, metabolic syndrome and lower urinary tract symptoms and its impact on quality of life in men ≥ 40 years. *Sci Rep.* 2022;12(1):6859.