

Analysis of Differences Degree of Severity and Quality of Life of BPH Diabetes with BPH non-Diabetes Patient

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Cover : Macroscopic preparation of left unilateral testis after testicular torsion.

A: Negative control (KN)

B: Testicular torsion 4 hours groups (KP4)

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ANALYSIS OF DIFFERENCES DEGREE OF SEVERITY AND QUALITY OF LIFE OF BPH DIABETES WITH BPH NON-DIABETES PATIENTS

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ABSTRACT

Objective: Benign Prostatic Hyperplasia (BPH) is a benign tumor located in prostate caused by prostate cell that will continuously grows which covalent with the aging process and the dihidrotestosteron level (DHT) increase. Prostate Hyperplasia can stop the urethra pars prostatics and causes a clogging in the urine's flow excreted from bladder. Lower Urinary Tract Symptoms (LUTS) is a bladder muscle compensation mechanism to excrete urine. Diabetes Mellitus (DM) is one of the risk factors of BPH. This research aimed to find the differences on the degree of severity and quality of life BPH DM with BPH non-DM. **Material & Methods:** This research was observational analytic with cross sectional design which done to 32 subjects that consist of 16 BPH-DM subjects and 16 BPH non-DM in Bina Sehat Hospital Jember, Paru Hospital Jember, and Bhayangkara Hospital Bondowoso which meet to the inclusion and exclusion criteria. Data acquired from lead interview result using International Prostate Symptoms Score (IPSS) questionnaire to evaluate the degree of severity and World Health Organization Quality of Life (WHOQOL-BREF) questionnaire to evaluate the quality of life. The data processing using Mann Whitney's comparative test. **Results:** IPSS and physic domain, psychology and social had p value in a row 0.001; 0.000; 0.001; and 0.001. **Conclusion:** It showed that there was a meaningful difference between BPH DM with BPH non-DM. Environment domain had p value of 0.373. It showed the non-meaningful difference between BPH DM with BPH non-DM.

Keywords: Benign prostate hyperplasia, diabetes mellitus, international prostate symptoms score, world health organization quality of life.

ABSTRAK

Tujuan: P pembesaran prostat jinak (BPH) adalah tumor jinak pada prostat akibat sel prostat yang terus mengalami pertumbuhan yang erat kaitannya dengan proses penuaan dan peningkatan kadar dihidrotestosteron (DHT). P pembesaran prostat dapat menyumbat uretra pars prostatica dan menyebabkan terhambatnya aliran urin keluar dari buli-buli. Lower Urinary Tract Symptoms (LUTS) merupakan mekanisme kompensasi otot buli-buli untuk mengeluarkan urin. Diabetes Mellitus (DM) merupakan salah satu faktor risiko BPH. Penelitian ini bertujuan untuk mengetahui perbedaan derajat keparahan dan kualitas hidup pasien BPH DM dengan BPH non-DM. **Bahan & Cara:** Jenis penelitian ini analitik observasional dengan desain cross sectional yang dilakukan pada 32 subjek yang terdiri atas 16 subjek BPH DM dan 16 BPH non-DM di Rumah Sakit Bina Sehat Jember, Rumah Sakit Paru Jember, dan Rumah Sakit Bhayangkara Bondowoso yang memenuhi kriteria inklusi dan eksklusi. Data diperoleh dari hasil wawancara terpimpin dengan menggunakan kuesioner International Prostate Symptoms Score (IPSS) untuk menilai derajat keparahan dan kuesioner World Health Organization Quality of Life (WHOQOL-BREF) untuk menilai kualitas hidup. Pengolahan data menggunakan uji komparasi Mann Whitney. IPSS dan domain fisik, psikologis dan sosial memiliki nilai p berturut-turut 0.001; 0.000; 0.001; dan 0.001. **Simpulan:** Hal tersebut menunjukkan ada perbedaan bermakna antara BPH DM dengan BPH non-DM. Domain lingkungan memiliki nilai p 0.373. Hal tersebut menunjukkan tidak ada perbedaan bermakna antara BPH DM dengan BPH non-DM.

Kata Kunci: Benign prostate hyperplasia, diabetes mellitus, international prostate symptoms score, world health organization quality of life.

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INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is actually a histopatological term, namely hyperplasia

of stromal cells and prostate gland epithelial cells.¹ The Indonesian Urological Association study in 2015 showed a nearly doubled increase in men aged 60 years or around 70% and will continue to increase

at age above 80 years reaching 90%.² In the period of 1993-2002 there were 1948 cases in Soetomo Hospital Surabaya BPH and in Sumber Waras Hospital with 617 cases in that time frame.³

The cause of BPH still not known for certain, however until these days it is related with the aging process that cause the decreased levels of male hormones, mainly testosterone. Testosterone in prostate gland later will be change into Dihidrotestosteron (DHT). Prostate enlargement causing lumen urethra prostatics constriction and clogging the urine streamline. This condition causing the increase of intravesical pressure. To be able to remove urine the bladder must contract stronger in order to fight the urine that stuck. Continuous contractions lead to anatomic changes in the bladder in the form of detrusor muscle hypertrophy, trabeculation, the formation of the selula, sakula, and bladder diventric. Structure change in the bladder felt by BPH patient as a complaint on the lower urinary tract symptoms (LUTS).⁴

Diabetes is endocrine disease which often met with the blood glucose level increase (hyperglycemic). Hyperglycemic emerge because insulin deficiency or there are factors that fight the insulin's act.⁵ The global prevalence rate of the diabetes mellitus (DM) patient in 2014 by 8.3% from the worldwide citizen and has increased in 2014 to 387 million cases.⁶

OBJECTIVE

The purposes of this research was to find the differences on the degree of severity and quality of life BPH Diabetes with BPH non-Diabetes also to find out the correlation between IPSS with the quality of life based on 4 domains, those were physical domain, psychologic, social, and environment.

MATERIAL & METHODS

The type of research used was an observational analytic survey research method with cross sectional study design. This research was conducted in 3 hospitals namely, Bina Sehat Hospital Jember, Paru Hospital Jember, and Bhayangkara Hospital Bondowoso in October-November 2017. This research received permission of ethical clearance from ethics commission of Faculty of Medicine, University of Jember.

Research sample were 32 subjects consist of 16 BPH DM patients and 16 BPH non-DM patient by using purposive sampling method based on inclusion criteria i.e. patients who have been diagnosed BPH with LUTS, patient that has been diagnosed BPH with LUTS and diagnosed with Diabetes Mellitus, patient age ≥ 40 years old, also willingly to become respondents by filling the patient's approval sheet and BPH with LUTS patient exclusion criteria that suffer heavy psychosis problem (dementia, delirium, schizophrenia, and disturbance) for the last 1 month, BPH with LUTS patient that suffer from disease that causing nocturnal polyuria (insipidus diabetes, kidney disease, heart failure, and hepar failure), patient that suffer from ISK and urolithiasis along with patient that consume diuretic medicines and vasopressin medicines.

Primary data acquired from lead interview result using International Prostate Symptoms Score (IPSS) questionnaire that consist of 7 questions about LUTS symptoms and 1 question about the quality of life and World Health Organization Quality of Life (WHOQOL-BREF) questionnaire consist of 26 question to evaluate the quality of life. Meanwhile the secondary data obtained from the medical records. Data analysis to know the differences between BPH DM group with BPH non-DM group by using Non Parametric test, Mann Whitney because the data in the form of ordinal scale with ordinal. Value of significance $p < 0.05$ and data showed in the form of table. Software that was use was computer program statistic processor Statistical Package for Social Science (SPSS) 16.0.

RESULTS

32 samples were collected with details of 16 samples of BPH DM patients and 16 BPH non DM patients that match the inclusion criteria and exclusion criteria. BPH DM and BPH non DM patient characteristic in Bina Sehat Hospital Jember, Paru Hospital Jember, and Bhayangkara Hospital Bondowoso as in Table 1.

Based on the analysis of the research data obtained comparison degree of severity using IPSS as a comparison in BPH DM with BPH non-DM patient through Mann Whitney test as in table 2.

Based on the analysis of the research data obtained the comparison of WHOQOL-BREF the quality of life based on 4 domains these were physical, psychological, social, and environmental

Table 1. BPH DM dan BPH non-DM patient characteristic in Bina Sehat Hospital Jember, Paru Hospital Jember, and Bhayangkara Hospital Bondowoso.

Characteristic	BPH+DM (Mean ± SD)	BPH Non-DM (Mean ± SD)
Age (years)	66.8 ± 5.31	65.3 ± 6.72
Early BPH diagnosed (months)	4.1 ± 0.88	4.3 ± 1.20
IPSS Score	32.1 ± 1.64	18.8 ± 8.27
The Quality of Life's Score		
Physical Domain	28.7 ± 3.00	53.1 ± 6.85
Psychology Domain	40.9 ± 4.52	47.6 ± 6.32
Social Domain	55.0 ± 6.91	69.0 ± 8.69
Environment Domain	53.5 ± 5.24	57.4 ± 6.30

Table 2. Mann Whitney comparison test result between BPH DM group and BPH non-DM group with IPSS as the standard of comparison.

IPSS	BPH + DM	BPH non-DM	Sum(n)	Value of Significance
Light	0	3	3	0.001
Medium	0	5	5	
Heavy	16	8	24	
Total	16	16	32	

Table 3. Mann Whitney comparison test result with the physical domain of quality of life as the standard of comparison.

Quality of Life	BPH + DM	BPH Non-DM	Sum (n)	Value of Significance
Very Bad	0	0	0	0.000
Bad	16	0	16	
Medium	0	13	13	
Good	0	3	3	
Very Good	0	0	0	
Total	16	16	32	

Table 4. Mann Whitney comparison test result with the psychological domain of quality of life as the standard of comparison.

Quality of Life	BPH+ DM	BPH non-DM	Sum (n)	Value of Significance
Very Bad	0	0	0	0.001
Bad	8	0	8	
Medium	8	16	24	
Good	0	0	0	
Very Good	0	0	0	
Total				

Table 5. Mann Whitney comparison test result with the social domain of quality of life as the standard of comparison.

Quality of Life	BPH + DM	BPH non-DM	Sum (n)	Value of Significance
Very Bad	0	0	0	0.001
Bad	0	0	0	
Medium	14	5	19	
Good	2	11	13	
Very Good	0	0	0	
Total				

Table 6. Mann Whitney comparison test result with the environmental domain of quality of life as the standard of comparison.

Quality of Life	BPH + DM	BPH non-DM	Sum (n)	Significance of Value
Very Bad	0	0	0	0.373
Bad	0	0	0	
Medium	14	12	26	
Good	2	4	6	
Very Good	0	0	0	
Total	16	16	32	

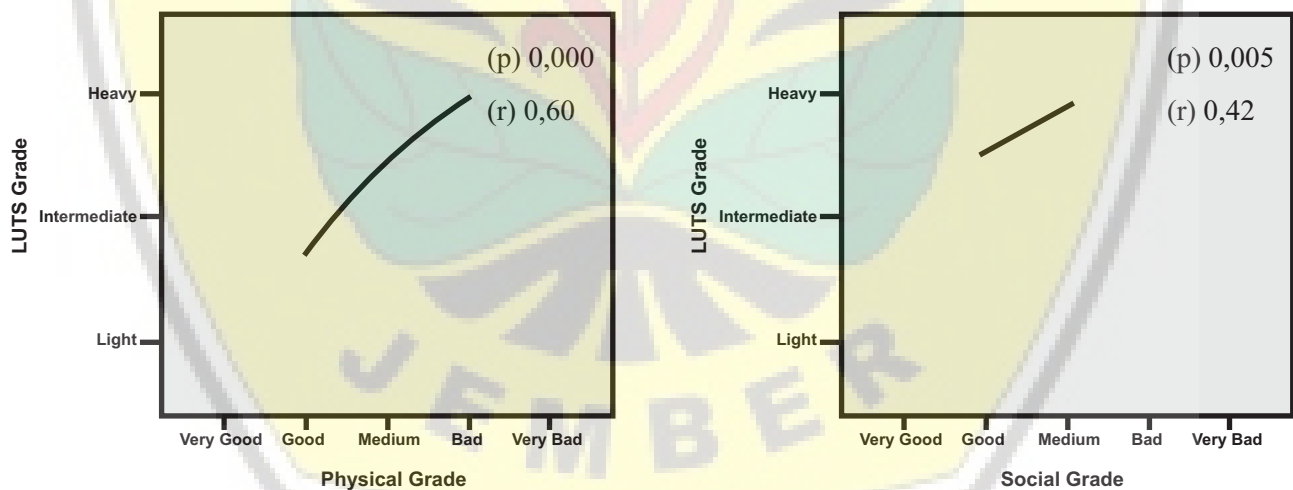


Image 1. Graphic of correlation test between IPSS and physical domain of quality of life.

Image 2. Graphic of correlation between IPSS and psychological domain of quality of life.

as the comparison on BPH DM and BPH non-DM patient through Mann Whitney test consecutively as in table 3, table 4, table 5, and table 6.

Comparison between BPH DM group with BPH non-DM group with IPSS as the standard of comparison has p value 0.001 ($p < 0.05$) and comparison with the physical, psychological, social

domain of quality of life have p value consecutively 0.000, 0.001, 0.001 ($p < 0.05$) meanwhile for the environmental domain has p value of 0.373 ($p > 0.05$)

Based on the analysis of the research data obtained correlation between IPSS with the quality of life WHOQOL-BREF based on 4 domains i.e. physical, psychological, social, and environmental

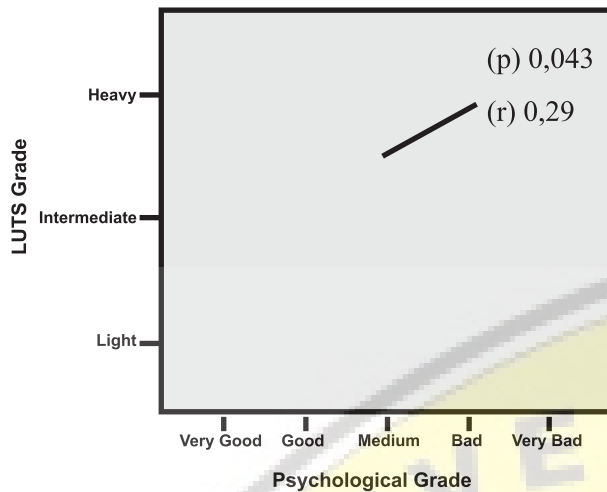


Image 3. Graphic of correlation between IPSS and social domain of quality of life.

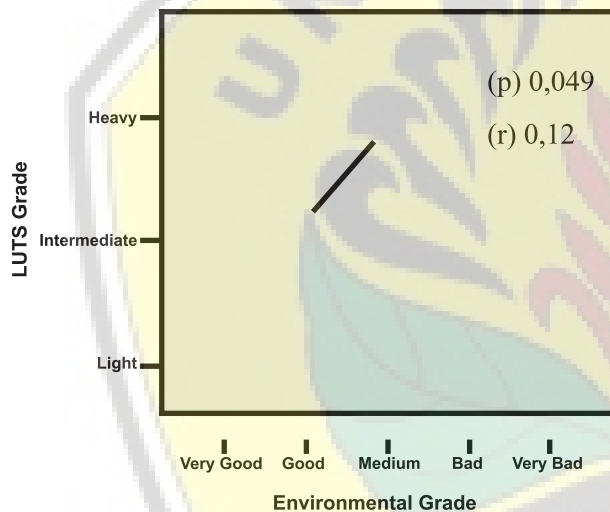


Image 4. Graphic of correlation between IPSS and environmental domain of quality of life.

through Somers'd test consecutively as in image 1, image 2, image 3, and image 4.

DISCUSSION

Sample characteristic based on data obtained it is known that the average age of BPH DM patient (66.8) with BPH non-DM (65.3) have a relatively small gap. This event match with Michel research result, 290 BPH DM patients mean age were 65.4 and 290 BPH non-DM patients mean age were 64.7 so there will not be any differences in age.⁷ Similar with Woo's research, 139 BPH DM patients mean age were 65.18 and 139 BPH non-DM patients mean age were 65.47 there is no age

differences.⁸ The Sample characteristic of BPH early diagnosed also had relatively small average gap so there was no difference at the early diagnosed of BPH.

The Mann Whitney comparison test result between BPH diabetes group and BPH non Diabetes group with IPSS as the standard of comparison shows the meaningful differences of BPH Diabetes group and BPH non Diabetes group. This is consistent with the Aruna, Woo, and Michel studies indicating that there is a significant difference in the group of BPH diabetes and BPH non Diabetes groups.⁷⁻⁹ Diabetes is a risk factor that is very closely related to LUTS. It has been proved that frequency and nocturia is a result from hyperosmolarity and secondary polydipction caused by hyperglycemi on diabetes patient.¹⁰ Diabetes less directly related to BPH development but more closely related to LUTS dynamic components.¹¹ The effect from insulin increase on diabetes patient can influence the increase of simpatethic neuron works, so tonus muscle power will increase. Hyperglycemic also take part in increasing free calcium in cytosol inside muscle and neurons, this also led to sympathetic neuron system activation. According to Rohrmann observation that LUTS severity increase happened to men with post-load glucose increase.¹²

Mann Whitney comparison test result between BPH diabetes group and BPH non-diabetes group with quality of life physical, psychological, social domains as the standard of comparison shows the meaningful differences of BPH diabetes group and BPH non-diabetes group. Meanwhile Mann Whitney comparison test result between BPH diabetes group and BPH non-diabetes group as the standard of comparison shows that there was not any meaningful difference BPH diabetes group and BPH non-diabetes group. BPH patient with medium until heavy LUTS symptoms have lower quality of life compares to BPH patient with light LUTS symptoms overall.¹³ Physical domain and Psychological domain show the significant effect, but did not shows a significant effects on social domain and environmental domain.¹³⁻¹⁵ Social domain of quality of life consists of personal relation, social support, and sexual activities. Environemental domain of quality of life consists of financial resources, freedom, physical safety, security, health cars, and social care, home environment, opportunities to go on vacation, opportunities to acquired information and skills, physical environment, and trans-

portation.¹⁶ A person satisfaction degree towards the related aspect with social domain and environmental domain will influence the person perspective.¹⁴ Quality of life according to World Health Organization Quality of Life (WHOQOL) group define as subjective concept that based on individual perception toward their position in life includes the context of culture and value system where they live and communicating with aim, standard, expectation and will to live.¹⁷

Correlation test result between IPSS and the quality of life on physical, psychological, social, and environmental domains obtained p value consecutively 0.000, 0.005, 0.043, and 0.049 it means that there is correlation between OPSS and four other domains on quality of life. If the value viewed from r (coefficient correlation) in order to set the bond or the correlation among the variables, the result between IPSS and quality of life on physical, social, psychological, and environmental domains consecutively 0.60, 0.42, 0.29, and 0.12 it means IPSS has medium relation or meaningful enough with physical and psychological domains, meanwhile IPSS has weak relation and very weak with social and environmental domains.

CONCLUSION

Based on the research result that done conclude three conclusion; first there were meaningful differences ($p < 0.05$) LUTS degree of severity between BPH DM patient with BPH non-DM patient. IPSS scores of BPH DM patient were higher compared to BPH non-DM. second, there were meaningful differences ($p < 0.05$) quality of life on 3 domains these were physical, psychological and social domains on the quality of life by BPH DM patient's scores lower compared to BPH non-DM. Third, there was meaningful correlation between IPSS and quality of life on four domains these were physical, psychological, social, and environmental. Physical and psychological domains showed correlation power stronger compared to the other domains with positive correlation direction.

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