ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

Prevalence and Risk Factors Associated with Benign Prostate Hyperplasia among Elderly Patients in Baidoa Hospitals in Somalia Cross Sectional Study

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Abstract:-

- ***Background***

The disorder known as benign prostatic hyperplasia (BPH) is closely linked to ageing. Its clinical presentation as lower urinary tract symptoms (LUTS) lowers the patient's quality of life, despite the fact that it is not life-threatening. Among males over 65, up to 30% may experience problematic LUTS.

- ***Objectives of the Study***

The aim of this study is to determine the prevalence and risk factors contributing benign prostate hyperplasia among elder patients in Baidoa hospitals in Somalia.

- ***Materials and Methods***

The study design was a hospital based cross sectional study.

- ***Results***

The prevalence of BPH shows that 19.01 % of the participants were becomes BPH while the remaining majority 80.99 was not. The age, the largest group is those aged 70-79 years, with 157 participants, representing 40.9%. In terms of family history of (BPH), 310 participants (80.7%) reported no family history, while 74 individuals (19.3%) indicated that they do have a family history of BPH. Examining systemic diseases, 51 participants (13.2%) have diabetes mellitus, and 67 individuals (17.3%) have hypertension. A smaller subset, 26 participants (6.7%), reported having both diabetes and hypertension. Regarding physical exercise, 310 individuals (80.7%), reported not engaging in regular physical activity, while only 74 participants (19.3%) they do exercise.

- ***Conclusion***

In summary, the data and reports from this study point to a 19.01% prevalence of benign prostatic hyperplasia (BPH). The development of BPH is significantly predicted by age. Bivariate chi-square analysis revealed a significant link between BPH and erectile dysfunction, kidney illnesses, diabetes mellitus, and urine retention (p-value <0.05). On the other hand, bivariate chi-square analysis revealed a significant relationship between BPH and being overweight and frequently consuming caffeine (p-value <0.05). Diet and lifestyle could be factors in this.

- ***Recommendations***

Lifestyle and behavioral interventions are reasonable first-line treatments for all patients. Straightforward interventions include limiting intake of the following: fluids prior to bedtime or travel; mild diuretics, such as caffeine and alcohol; and bladder irritants, such as highly seasoned or irritative foods. **Older be aware that blocking of the urethra** (the urine tube): As the prostate grows larger, it may block the bladder outlet and stop the bladder from emptying. In some cases, urine may get stored up until it starts to leak out. If this happens, see a doctor straight away, so the patients should urinate quickly before experiencing any problem.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

I. INTRODUCTION

➢ *Background of the Study*

Lower urinary tract symptoms (LUTS), including urgency, frequency, nocturia, incomplete urination, and a weak urine stream, are the primary manifestations of benign prostatic hyperplasia (BPH), an age-related condition.One In 2025, there are projected to be 75 million BPH-afflicted elderly persons in China.2. About 15 million men in the US suffer with BPH-related LUTS, which affects more than 20% of males between the ages of 30 and 79.3. According to a meta-analysis of the prevalence of BPH worldwide, the lifetime chance of After the age of 40, the prevalence of BPH rises, reaching 8% to 60% by the age of 90. According to certain studies, Asians are less likely to be at risk than white people in the West. Diet, lifestyle, and genetics may among addition, BPH affects about 50% of men over 60, with a frequency of almost 80% among men in their 70s, according to reports. About 25% of men with histological BPH are thought to have lower urinary tract symptoms (LUTS) in clinical practice, and these are treated in some way (1).

Additionally, figures from different sites differ significantly; the findings indicate that around one in four men will get BPH at some point in their lives (2).

About one-third of males over 50 suffer with BPH. Due to its medical consequences, BPH significantly increases the health burden on society and causes these patients' suffering. It worsens with ageing and causes severe urine retention, urinary tract infections, and renal failure in older men (3).

Few research has been conducted on the epidemiology of benign prostatic hyperplasia in Ethiopia thus far, but none have examined the prevalence and contributing factors of BPH in the Southern Region. Furthermore, regarding adult male patients admitted to the surgical ward of Hawassa University Comprehensive Specialised Hospital (HUCSH), Adare General Hospital (AGH), and Yirgalem General Hospital in Sidama, Ethiopia, the study examines various variables that have not yet been investigated in the study area (4).

Men are primarily affected by BPH, and symptoms usually start to appear around age 40. By the age of 60, 50 to 60 percent of men have histological evidence of the illness, and it has been demonstrated that the frequency of symptoms increases with age. Severe LUTS, acute urine retention, urinary incontinence, recurrent UTIs, and renal insufficiency can all be consequences of untreated BPH. A person's quality of life may be directly impacted negatively by each of these. In certain cases, the illness may potentially exacerbate pre-existing conditions. Even though BPH cannot be prevented, the issues that come with its development can be lessened by being aware of the contributing variables, especially those that can be changed. People ought to think about (5)

At our medical facility, BPH is treated with either medication or surgery. α-blockers, 5-α-reductase inhibitors, or a mix of the two are used as medical treatments. The gold standard for surgically treating BPH is still transurethral resection of the prostate (TURP).23 Since TURP and other surgical treatments for BPH therapy are not readily available, open prostatectomy using transvesical and retropubic techniques is now the primary surgical option for BPH care at our health centre. The small sample size, the exclusion of patients with hard nodules based solely on digital rectal examination, and the fact that individuals with PSAs below 4 ng/ml were not undergoing prostate biopsies were some of the study's drawbacks (6).

➢ *Study Objectives*

The aim of this study is to determine the factors associated with benign prostate hyperplasia among elderly patients in Baidoa hospitals in Somalia

II. METHODOLOGY

The study employed a cross-sectional control design to investigate the prevalence and risk factors associated with benign prostatic hyperplasia (BPH) among elderly patients in Baidoa hospitals, Somalia, from May to September 2024. Participants included elderly patients experiencing lower urinary tract symptoms (LUTS) who attended the hospitals, with inclusion criteria specifying that they must have LUTS. Exclusion criteria ruled out individuals without LUTS and those who declined to participate.

The sample size was determined using the Kish formula, estimating a prevalence of 50%, with a 95% confidence level and a 5% margin of error, leading to a requirement of 384 participants. Simple random sampling was utilized to select participants from the patient clinic list.

Data were collected through a pre-tested structured questionnaire, initially designed in English and translated into Somali, which gathered information on socio-demographics, lifestyle factors, and health-related variables.

Data management involved compiling responses using Kobo Data Collector, followed by entry and analysis in SPSS software. Bivariate analysis assessed associations between dependent and independent variables using odds ratios, with statistical significance set at $p \leq 0.05$, while logistic regression identified independent predictors of BPH.

Ethical approval was secured from the Ethics and Research Committee of Benadir University, and permissions were obtained from participating health facilities. Informed verbal consent was acquired from each participant or their caregiver, with strict confidentiality protocols in place to protect respondents' privacy, ensuring that all collected data were used solely for academic purposes.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

III. RESULTS

➢ *Introduction*

Total of 384 study participants, were interviewed, tables and charts were used to illustrate the results. This chapter has been organized into sociodemographic characteristics, health related factors and lifestyle factor. Descriptive statistics such as frequencies, percentages were used to present data. To determine Prevalence and risk factors associated with benign prostate hyperplasia among elderly patients in Baidoa hospitals in Somalia, bivariate, Multivariate regression analysis was performed using SPSS. The results are presented in charts and tables.

➢ *Prevalence of BPHS*

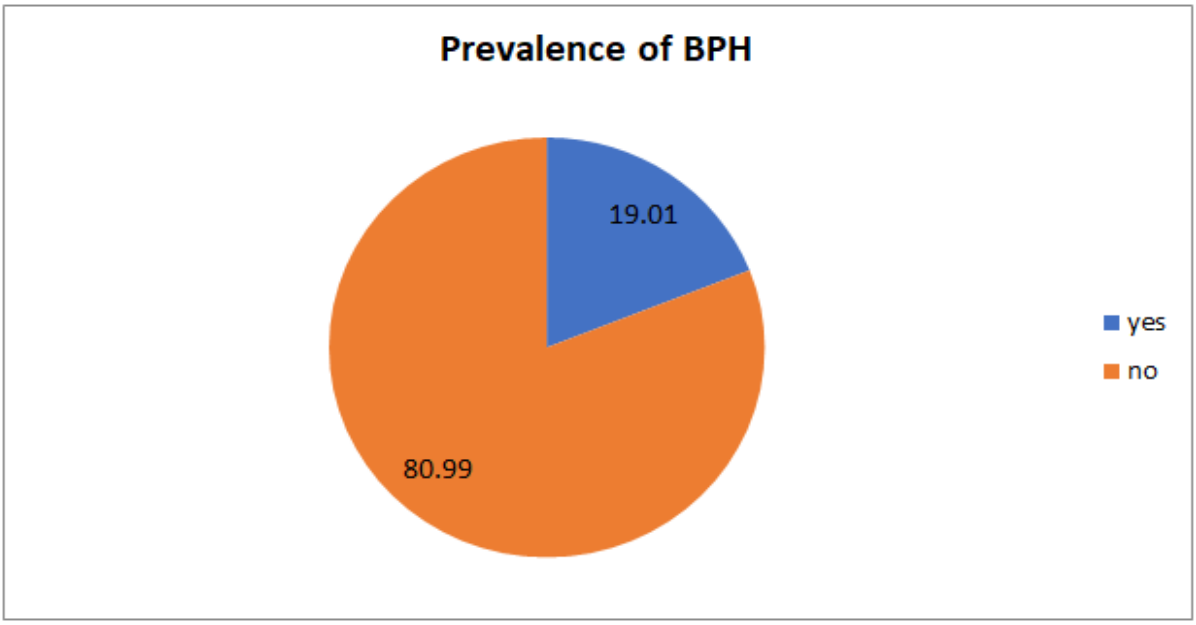

Fig 1 Prevalence of BPH

The figure above shows that 19.01 % of the participants were becomes BPH while the remaining majority 80.99 was not.

➢ *Sociodemographic factors*

Table 1: Sociodemographic Factors

Variables	Frequency	Percentage
Age group		
50-59 years	65	16.9
60-69 years	141	36.7
70-79 years	157	40.9
above 80 years	21	5.5
Marital status		
Single	0	0
Divorced	31	8.1
Married	347	90.1
Widowed	6	1.6
Educational Level		
Illiterate	286	74.3
Primary	88	22.9
Secondary	4	1.0
University	6	1.6
Place of residence		
Rural	105	27.3
Urban	279	72.7
Occupation		
Employed	177	46.1
Un-employed	207	53.9
income level		

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

Low	239	62.2
Middle	141	36.7
High	4	1.0

The table above shows that the age, participants aged 50-59 years constitutes 65 individuals, which is 16.9% of the total sample. The age group of 60-69 years includes 141 participants, making up 36.7%. The largest group is those aged 70-79 years, with 157 participants, representing 40.9%. Lastly, 21 participants, or 5.5%, are aged above 80 years. Analyzing marital status, the majority of participants are married, totaling 347 individuals, which accounts for 90.1% of the sample. There are 31 divorced participants, representing 8.1%, while 6 individuals (1.6%) are widowed. Notably, there are no participants classified as single.

The educational level reveals that a significant portion of the participants are illiterate, with 286 individuals (74.3%) having no formal education. Primary education is completed by 88 participants, making up 22.9%. Only 4 participants (1.0%) have secondary education, and 6 individuals (1.6%) have attained a university degree. Regarding place of residence, a substantial majority live in urban areas, with 279 participants (72.7%), while 105 individuals (27.3%) reside in rural areas.

Occupationally, 177 participants are employed, which represents 46.1% of the sample, whereas 207 individuals (53.9%) are unemployed. Finally, income levels indicate that most participants fall within the low-income category, totaling 239 individuals (62.2%). The middle-income group includes 141 participants (36.7%), while only 4 participants (1.0%) are classified as high-income.

Table 2 Health Related Factors

Variables	Frequency	Percentage
Family history of BPH		
No	310	80.7
Yes	74	19.3
Systemic diseases		
Diabetes mellitus	51	13.2
Hypertension	67	17.3
Both DM and HTN	26	6.7
Hyperlipidemia	34	8.8
Others	57	14.7
None	197	50.9
Patient have BPH		
No	311	81.0
Yes	73	19.0
Erectile dysfunction		
No	234	60.5
Yes	150	38.8
Kidney diseases		
No	245	63.3
Yes	139	35.9
Urine retention		
No	254	65.6
Yes	130	33.6

- *Health Related Factors*

In terms of family history of benign prostatic hyperplasia (BPH), 310 participants (80.7%) reported no family history, while 74 individuals (19.3%) indicated that they do have a family history of BPH.

Examining systemic diseases, 51 participants (13.2%) have diabetes mellitus, and 67 individuals (17.3%) have hypertension. A smaller subset, 26 participants (6.7%), reported having both diabetes and hypertension. Additionally, 34 participants (8.8%) have hyperlipidemia, while 57 individuals (14.7%) reported other systemic diseases. Notably, 197 participants (50.9%) reported having no systemic diseases. Regarding the presence of BPH, 311 participants (80.4%) do not have BPH, while 73 individuals (18.9%) reported having the condition.

The analysis also highlights erectile dysfunction among participants, with 234 individuals (60.5%) indicating they do not experience erectile dysfunction, whereas 150 participants (38.8%) reported having erectile dysfunction. In terms of kidney health, 245 participants (63.3%) do not have kidney diseases, while 139 individuals (35.9%) reported having kidney conditions. Finally, concerning urine retention, 254 participants (65.6%) do not experience urine retention, while 130 individuals (33.6%) reported having this issue.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

Table 3 Lifestyle Factors

Variables	Frequency	Percentage
Physical exercise		
No	310	80.7
Yes	74	19.3
Eat food more in		
Red meat, fat, milk and dairy products, cereals, bread, poultry and starch	350	91.1
Vegetables, fruits, polyunsaturated fatty acids, linoleic acid and vitamin D	34	8.9
Smoking		
No	342	89.1
Yes	42	10.9
BMI		
Under weight (< 18.5)	7	1.8
Normal (18.5-24.5)	283	73.7
Overweight (24.6-29.9)	69	18.0
Obese (30-34.9)	30	7.8
Extremely obese	26	6.8
Drink caffeine most of the time		
No	290	75.5
Yes	94	24.5

➢ *lifestyle factors*

Regarding physical exercise, a significant majority of participants, 310 individuals (80.7%), reported not engaging in regular physical activity, while only 74 participants (19.3%) indicated that they do exercise. When examining dietary habits, a large proportion of participants, 350 (91.1%), consume more foods high in red meat, fats, and dairy products, cereals, bread, poultry, and starch. In contrast, only 34 participants (8.9%) reported a diet rich in vegetables, fruits, polyunsaturated fatty acids, linoleic acid, and vitamin D.

In terms of smoking, the majority of participants are non-smokers, with 342 individuals (89.1%) indicating they do not smoke. Conversely, 42 participants (10.9%) reported being smokers. Analyzing Body Mass Index (BMI), the majority of participants fall within the normal range (18.5-24.5), totaling 283 individuals (73.7%). Those classified as overweight (BMI 24.6-29.9) comprise 69 participants (18.0%), while 30 individuals (7.8%) are classified as obese (BMI 30-34.9), and 26 participants (6.8%) are extremely obese. Only 7 participants (1.8%) are categorized as underweight (BMI < 18.5).

Lastly, regarding caffeine consumption, 290 participants (75.5%) reported that they do not drink caffeine most of the time, while 94 individuals (24.5%) indicated that they do.

➢ *Bivariate Analysis*

Table 4 Bivariate Analysis of Sociodemographic Factors

Variables	BPH		Chi-square	P-value
	Yes	No		
Age group			28.556	<0.001
50-59 years	21(28.8%)	44(14.1%)		
60-69 years	38(52.1%)	103(33.1%)		
70-79 years	14(19.2%)	143(46.0%)		
above 80 years	0(0.0%)	21(6.8%)		
Marital status				
Single	0(0.0%)	0(0.0%)	9.611	0.048
Married	73(100.0%)	274(88.1%)		
Divorced	0(0.0%)	31(10.0%)		
Widowed	0(0.0%)	6(1.9%)		
Educational Level				
Illiterate	70(95.9%)	216(69.5%)	30.885	0.201
Primary	0(0.0%)	88(28.3%)		
Secondary	0(0.0%)	4(1.3%)		
University	3(4.1%)	3(1.0%)		
Place of residence				
Rural	0(0.0%)	105(33.8%)	33.922	0.391
Urban	73(100.0%)	206(66.2%)		

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

Occupation				
Employed	25(34.2%)	152(48.9%)	5.091	0.24
Un-employed	48(65.8%)	159(51.1%)		
Income level				
Low	189(60.8%)	50(68.5%)	2.172	0.338
Middle	118(37.9%)	23(31.5%)		
High	4(1.3%)	0(0.0%)		

➢ *Bivariate Analysis of Sociodemographic*

The bivariate analysis reveals significant associations between age group and marital status with benign prostatic hyperplasia (BPH). Older age groups, particularly 60-69 years (52.1%), have higher BPH prevalence ($p < 0.001$). Marital status also shows a significant association, with all BPH cases being married ($p = 0.048$). Other factors, such as educational level, place of residence, occupation, and income level, do not show statistically significant associations with BPH, though most BPH cases are found among the illiterate (95.9%) and unemployed (65.8%) groups.

➢ *Bivariate Analysis of Health-Related Factors*

Table 5 Bivariate Analysis of Health-Related Factors

Variables	**BPH**		**Chi-square**	**P-value**
	Yes	No		
Family history of BPH				
No	54(74.0%)	256(82.3%)	2.645	0.137
Yes	19(26.0%)	55(17.7%)		
Systemic diseases				
Diabetes mellitus	4(5.5%)	47(15.1%)	4.764	0.034
Hypertension	10(13.7%)	57(18.3%)	0.880	0.396
Both DM and HTN	13(17.8%)	13(4.2%)	17.395	<0.001
Hyperlipidemia	0(0.0%)	34(10.9%)	8.756	<0.001
Others	30(41.1%)	27(8.7%)	49.143	<0.001
None	16(21.9%)	181(58.4%)	31.460	<0.001
Erectile dysfunction				
No	10(13.7%)	224(72.0%)	84.498	<0.001
Yes	63(86.3%)	87(28.0%)		
Kidney diseases				
No	29(39.7%)	216(69.5%)	22.623	<0.001
Yes	44(60.3%)	95(30.5%)		
Urine retention				
No	22(30.1%)	232(74.6%)	52.191	<0.001
Yes	51(69.9%)	79(25.4%)		

➢ *Bivariate analysis of health-related factors*

The analysis shows several health-related factors significantly associated with BPH. BPH cases are more likely to have both diabetes mellitus and hypertension (17.8%, $p < 0.001$), hyperlipidemia ($p < 0.001$), other systemic diseases (41.1%, $p < 0.001$), and erectile dysfunction (86.3%, $p < 0.001$). Additionally, BPH is significantly associated with kidney diseases (60.3%, $p < 0.001$) and urine retention (69.9%, $p < 0.001$).

In contrast, there is no significant association between BPH and family history of BPH ($p = 0.137$), hypertension alone ($p = 0.396$), or diabetes mellitus alone ($p = 0.034$).

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

➢ *Bivariate Analysis of Lifestyle Factors*

Table 6 Bivariate Analysis of Lifestyle Factors

Variables	BPH		Chi-square	P-value
	Yes	No		
Physical exercise				
No	57(78.1%)	253(81.4%)	0.406	0.513
Yes	16(21.9%)	58(18.6%)		
Eat food more in				
Red meat, fat, milk and dairy products, cereals, bread, poultry and starch	63(86.3%)	287(92.3%)	2.621	0.112
Vegetables, fruits, polyunsaturated fatty acids, linoleic acid and vitamin D	10(13.7%)	24(7.7%)		
Smoking				
No	69(94.5%)	273(87.8%)	2.756	0.142
Yes	4(5.5%)	38(12.2%)		
BMI				
Under weight (< 18.5)	1(1.4%)	6(1.9%)	0.103	>1.000
Normal (18.5-24.5)	41(56.2%)	242(77.8%)	14.295	<0.001
Overweight (24.6-29.9)	31(42.5%)	38(12.2%)	36.696	<0.001
Obese (30-34.9)	6(8.2%)	24(7.7%)	0.021	0.812
Extremely obese	1(1.4%)	25(8.0%)	4.165	0.039
Drink caffeine most of the time				
No	66(90.4%)	224(72.0%)	10.810	<0.001
Yes	7(9.6%)	87(28.0%)		

➢ *Bivariate analysis of lifestyle factors*

The analysis reveals several significant associations with BPH. BPH cases are more likely to have a higher BMI, specifically being overweight (42.5%, $p < 0.001$) or extremely obese ($p = 0.039$). Normal BMI is less common in BPH cases compared to non-BPH individuals ($p < 0.001$). Additionally, drinking caffeine most of the time is significantly associated with lower BPH occurrence ($p < 0.001$).

In contrast, physical exercise ($p = 0.513$), dietary habits ($p = 0.112$), smoking ($p = 0.142$), and general obesity ($p = 0.812$) do not show significant associations with BPH.

Table 7 Multivariate analysis of BPH

Variables	AOR (95% of CI)	P-value
Age group		
50-59 years		
60-69 years	0.773(0.408-1.465)	0.430
70-79 years	2.205(1.096-2.437)	0.001
Above 80 years	0.000(0.000)	0.998
Erectile dysfunction		
No	1	
Yes	9.262(4.207-20.389)	<0.001
Kidney diseases		
No		
Yes	1.406(0.759-2.604)	0.278
Urine retention		
No		
Yes	2.602(1.373-4.930)	0.003
Drink caffeine most of the time		
No		
Yes	3.662(1.617-8.294)	0.002

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➢ *Multivariate Analysis of BPH*

First, a lower likelihood of the outcome was observed among those 60–69 years old, with an odds ratio (OR) of 0.773; however, this result was not statistically significant (p = 0.430). On the other hand, an OR of 2.205, which is statistically significant (p = 0.001), shows that individuals aged 70-79 years were more than twice as likely to encounter the outcome. The odds ratio for people over 80 years of age was 0.000, indicating that there were no cases in this category, and the p-value of 0.998 indicated that there was no significant correlation.

With an OR of 9.262 and highly significant results (p < 0.001), individuals with erectile dysfunction were roughly 9 times more likely to encounter the outcome in comparison to those without erectile dysfunction.

In terms of kidney diseases, the presence of these conditions did not show a significant association, with an OR of 1.406 and a p-value of 0.278.Urine retention was significantly associated with the outcome, as individuals with this condition were over 2.5 times more likely to experience the outcome, with an OR of 2.602 and a p-value of 0.003. Finally, those who do not drink caffeine most of the time were about 3.7 times more likely to experience the outcome compared to regular caffeine drinkers, with an OR of 3.662 and significant results (p = 0.002). Overall, the analysis indicates that age (specifically the 70-79 age group), erectile dysfunction, urine retention, and caffeine consumption are significant factors associated with the outcome, while kidney diseases and the 60-69 age group did not show significant associations.

IV. DISCUSSION

A. Age

Age group was found to be significantly association with BPH at bivariate chi-square analysis (p-value <0.05).

A study mentioned in the Arab Journal of Urology highlights the common understanding that the incidence of benign prostatic hyperplasia (BPH) tends to increase as men grow older. (7)

An additional study highlights that "Numerous epidemiological studies have shown that age is the principal unmodifiable risk factor for LUTS"2. This supports the idea that age is a major factor in the development of BPH (8).

B. BMI

Overweight, drink caffeine most of the time were found to be significantly association with BPH at bivariate chi-square analysis (p-value <0.05).

Obesity and BPH/LUTS: A number of sources point to a possible connection between central obesity, as determined by waist circumference, and either BPH or LUTS (9).

The Frontiers article mentions a connection between obesity and BPH, stating that "Obesity has been linked with certain diseases, including BPH". The article goes on to explain that globally, men with a higher Body Mass Index (BMI) are more likely to have larger prostates and more severe BPH symptoms (10)

C. Urine Retention

Urine retention was significantly associated with the outcome, as individuals with this condition were over 2.5 times more likely to experience the outcome, with an OR of 2.602 and a p-value of 0.003.

Chronic prostate inflammation at baseline was linked to a higher risk of acute urine retention (AUR) (HR 1.6–1.8, p = 0.001)1, according to a study in the sources1. This result supports your question by showing a strong correlation between a medical condition (chronic prostate inflammation) and an increased risk of developing AUR (11).

One of the most important and uncomfortable aspects of benign prostatic hyperplasia's (BPH) normal course is acute urine retention (AUR). Acute urine retention (AUR) can be seen in up to one-third of patients after surgery for BPH(12)

V. CONCLUSION

This study, conducted across various hospitals in Baidoa, Somalia, sought to investigate the prevalence and risk factors associated with benign prostatic hyperplasia (BPH) within the elderly male population. The findings revealed a prevalence rate of 19.01% for BPH among the participants. Reinforcing established medical knowledge, the study confirmed a strong correlation between increasing age and a heightened risk of developing BPH, particularly for those in the 70-79 age groups.

Furthermore, being overweight was found to be significantly associated with BPH, while, intriguingly, regular caffeine consumption appeared to have a protective effect, although further investigation is needed to fully elucidate this relationship. The study also highlighted statistically significant associations between BPH and other conditions such as erectile dysfunction, kidney diseases, and urine retention.

These findings emphasize the need for a multi-pronged approach to managing BPH, encompassing both preventative measures, such as promoting healthy weight management, and comprehensive treatment strategies that address not only urinary symptoms but also related conditions like erectile dysfunction and urine retention.

This study makes a valuable contribution to our understanding of the prevalence and risk factors for BPH in the context of Baidoa, Somalia. Moreover, the study's identification of modifiable risk factors, such as obesity,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24OCT449

underscores the potential for preventative strategies to mitigate the burden of BPH among ageing male populations.

RECOMMENDATIONS

Based on these conclusions, the following recommendations emerge:

- Encourage Healthy Weight Management: Given the connection between obesity and BPH, medical professionals should stress the value of eating a balanced diet and getting regular exercise, particularly for men who have been diagnosed with or are at risk for BPH.

- Additional Studies on the Function of Caffeine: Although potentially important, the chapter's conclusion about coffee use and BPH is not thoroughly examined. To elucidate this association and determine whether coffee use affects the onset or course of BPH, more research is required.

- Holistic BPH Management: Given the complex effects of BPH on patients' mental and physical health, healthcare plans should take a comprehensive approach. This entails treating not just symptoms related to the urinary system but also related disorders like erectile dysfunction and urine retention, sometimes with the help of medication, lifestyle changes, or counselling.

- Patient Education and Awareness: It's critical to inform men about BPH, its risk factors, and possible treatment options. This gives people the ability to take proactive steps like keeping a healthy weight, make educated decisions about their health, and get timely medical help when needed.

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