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CORRELATION OF AGE FACTORS WITH INCIDENCE RATES OF BENIGN PROSTATIC HYPERPLASIA DISEASE AT RSU ROYAL PRIMA IN 2022

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Abstract

Benign prostatic hyperplasia is a condition where stromal and epithelial contributions are proliferative. The clinical features of benign prostatic hyperplasia are prostate enlargement, lower urinary tract complaints, and bladder obstruction. Several factors are thought to increase the risk of benign prostate hyperplasia, including age, family history, obesity, physical activity, diabetes, diet, smoking and alcohol consumption. This study aims to determine the relationship between age factors and the incidence of benign prostatic hyperplasia disease at RSU Royal Prima Medan. This study used quantitative research with a cross-sectional approach. The sampling technique in this study used a total sampling technique. This study analyzed a sample of 32 data using univariate and bivariate tests using Chi-Square. Based on the univariate test, it is known that the incidence of benign prostatic hyperplasia mostly occurs at the age of 61-70 years, as many as 15 people (46.9%). Based on the results of ultrasound, the size of the prostate volume is mostly 61 - 80 ml, as many as 15 people (46.9%). Based on the bivariate test using Chi-Square, the p-value is 0.023 ($p<0.05$), so it can be concluded that there is a significant relationship between age and benign prostatic hyperplasia.

Keywords: Age; Benign Prostatic Hyperplasia (BPH); Prostate Volume.

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Introduction

Every year, the population's life expectancy in Indonesia increases, which indicates population growth (Young et al., 2019). Census Results Residents in September 2020 noted that the number of residents in Indonesia amounted to 270.20 million souls. Increasing age hope life shows that the level of well-being of the public is increasing. However, an increase in non-communicable diseases will also occur as the population in Indonesia increases. Wrong One disease percentage will increase with age is Benign Prostatic Hyperplasia, commonly called Benign Prostatic Hyperplasia (BPH) (Gustikasari et al., 2020).

Benign prostatic hyperplasia is a condition in which the stromal and epithelial contributions are proliferative. Benign prostatic hyperplasia is detected as a histological finding in men over forty years of age. The clinical picture of benign prostatic hyperplasia is prostate enlargement, complaints in the lower part of the urinary tract, and bladder outlet obstruction. However, the clinical picture of benign prostatic hyperplasia does not always occur. Prostate enlargement, complaints in the lower urinary tract, and bladder outlet obstruction are not seen to the same extent in all patients (Atan, 2021).

Benign prostatic hyperplasia is usually experienced by adult men with several different risk percentages. A study found that around 40% of benign prostate enlargement is experienced by men aged 40 years; this will increase to 50% in men aged 50-60 years and will reach 90% in men over the age of 70 years. As many as 60% of men over the age of 80 will experience benign prostatic hyperplasia. This increase in cases will continue (Diba, 2019).

The exact prevalence of benign prostatic hyperplasia in Indonesia has not been investigated in any way. However, as an example of the prevalence of medical institutions at Cipto Mangunkusumo Hospital (RSCM) from 1994 to 2013, 3,804 cases were found with an average

age of 66.61 years. Meanwhile, data from Hasan Sadikin Hospital for 2012 - 2016 found 718 cases with an average age of 67.9 years (Tjahjodjati et al., 2017).

Although the cause of benign prostatic hyperplasia is still unknown, there are several hypotheses that benign prostatic hyperplasia is closely related to high levels of dihydrosterone (DHT) and age. Some hypotheses that are believed to cause benign prostate enlargement are an imbalance of estrogen and testosterone, interactions between stromal cells and prostate epithelium, and lack of cell death (apoptosis). Several factors are thought to increase the risk of benign prostatic hyperplasia, including age, family history, obesity, physical activity, diabetes, diet, smoking and alcohol consumption (SITUMORANG, 2021).

Based on the background description above, researchers are interested in conducting research titled "Correlation of Age Factors with Incidence Rates of Benign Prostatic Hyperplasia Disease at RSU Royal Prima in 2022".

Research methods

This research uses a quantitative type of research with a *cross-sectional approach*. This research was carried out at RSU Royal Prima from August 2023 to September 2023. Sampling in this study used a *total sampling technique* with a total sample of 32 medical record data. This research data was analyzed using *Statistical Product and Service Solutions* (SPPS) software. Univariate analysis and bivariate analysis were carried out using the *Chi-Square test*.

Research result

Table 1
Frequency Distribution of Benign Prostatic Hyperplasia Patients Based on Age at RSU Royal Prima in 2022

Age	Frequency (f)	Percentage (n)
40-50 years	2	6.3
51-60 years old	4	12.5
61-70 years old	15	46.9
71-80 years old	10	31.3
>80 years	1	3.1
Total	32	100.0

A table shows that of the total 32 patients recorded, there were two patients (6.3%). With aged 40-50 years, four people (12.5%) patients aged 51-60 years, 15 people (46.9%) patients with aged 61-70 years, ten people (31.3%) patients with aged 71-80 years, and one person (3.1%) patient with age over 80 years old. So, most patients with Benign Prostatic Hyperplasia are aged 61-70.

Table 2
Frequency Distribution of Concomitant Diseases in Patients with Benign Prostatic Hyperplasia at RSU Royal Prima in 2022

Disease Participant	Frequency (f)	Percentage (n)
DM	11	34.4
Hypertension _	14	43.8
DM and H hypertension	2	6.3
isn't any	5	15.6
Total	32	100.0

Based on a table, of the total 32 patients recorded, there were 11 patients (34.4%). Own disease accompanying DM, 14 people (43.8%) patients own disease accompanying hypertension, two people (6.3%) patients own disease comorbid DM and hypertension, and five people (15.6%) patients No own disease accompanying. So you can conclude that the majority of patients with Benign Prostatic Hyperplasia own disease accompanying hypertension.

Table 3
Frequency Distribution of Prostate Volume in Benign Prostatic Hyperplasia Patients at RSU Royal Prima in 2022

Prostate Volume (ml)	Frequency (f)	Percentage (n)
20 - 40	6	18.8
41 - 60	4	12.5
61 - 80	15	46.9
>80	7	21.9
Total	32	100.0

Based on the table, it can be seen that Of the total 32 patients recorded, there were 6 (18.8%) patients had a prostate volume of 20-40, 4 people (12.5%) patients had a prostate volume of 41-60,15 people (46.9%) patients had a prostate volume of 61-80, and 7 people (21.9%) patients have prostate volume above 80. So, the majority of the patient with Benign Prostatic Hyperplasia has a prostate volume of 61-80.

Table 4
Frequency Distribution of Types of Therapy Used by Benign Prostatic Hyperplasia Patients at RSU Royal Prima in 2022

Types of Therapy	Frequency (f)	Percentage (n)
M medicaments	12	37.5
TURP	20	62.5
Total	32	100.0

Based on the table, of the total 32 patients recorded, 12 (37.5%) received type therapy medication, and 20 (62.5%) received type TURP therapy. So, it can be concluded that most diagnosed patients Benign Prostatic Hyperplasia get TURP therapy.

Table 5
Relationships Age With Volume Prostate

Age	Prostate Volume										P
	20-40		41-60		61-80		>80		Amount		
	f	%	f	%	f	%	f	%	f	%	(Value)
40-50 years	1	50.0%	1	50.0%	0	0.0%	0	0.0%	2	100.0%	
51-60 years old	1	25.0%	1	25.0%	1	25.0%	1	25.0%	4	100.0%	
61-70 years old	2	13.3%	1	6.7%	8	53.3%	4	26.7%	15	100.0%	0.023
71-80 years old	2	20.0%	1	10.0%	5	50.0%	2	20.0%	10	100.0%	
>80 years	0	0.0%	0	0.0%	1	100.0%	0	0.0%	1	100.0%	
Total	6	18.8%	4	12.5%	15	46.9%	7	21.9%	32	100.0%	

Making and Conclusions from *Chi-Square Test Results*: Based on the output table above, it is known as mark Asymp. Sig. (2-sided) Alternatively, the p-value in the *Pearson Chi-Square test* is 0.023. Because of value Asymp. Sig. (2-sided) Alternatively, p-value 0.023 < 0.05, then based on base taking the decision above, yes concluded that "There is a relationship between age and prostate volume". This matter can also mean that the more people get older, the bigger the increase in prostate volume.

Discussion

The results of research on 32 patients with Benign Prostatic Hyperplasia data in the Medical Records of RSU Royal Prima in 2022 showed that the most age data was in the 61-70 year age group, 15 people (46.9%), with the lowest age being 41 years and the highest age being 84 years. The largest prostate volume was in the 61 - 80 ml group, 15 people (46.9%).

The relationship between age and prostate volume in Benign Prostatic Hyperplasia patients in the Medical Records of RSU Royal Prima was analyzed using the Chi-Square test. The *Pearson*

Chi-Square test shows a p-value of 0.023 (p<0.05), meaning a relationship exists between age and prostate volume.

The results of this study are in line with research conducted by (2020), which states that there is a significant relationship between age and prostate volume with a p-value of 0.000 (p<0.05). Research conducted by (Putra et al., 2016) also states a significant relationship between age and prostate volume with a p-value <0.001. However, this research is not in line with research conducted by Januar (2018); the results of his research stated that there was no significant correlation between age and prostate volume with a p-value of 0.340 (p>0.05), possibly influenced by the number of sample and other factors.

Testosterone levels will decrease with age, while the estrogen hormone remains relatively constant. In the prostate, estrogen plays a role in the proliferation of prostate gland cells by increasing the sensitivity of prostate cells to androgen hormone stimulation, increasing the number of androgen receptors, and reducing the number of prostate cell deaths (apoptosis). Even though the stimulation for forming new cells due to testosterone stimulation decreases, existing prostate cells will have a longer lifespan to make the prostate mass larger (Umam et al., 2020). Changes in the prostate due to increasing age reduce the ability of the bladder to maintain urine flow during the adaptation process due to obstruction from an enlarged prostate, thus causing symptoms (Alfiansyah et al., 2022).

In the results of this study, it was found that the most common comorbidity in medical records for benign prostatic hyperplasia was hypertension in as many as 14 people (43.8%). This research is in line with research conducted by (2016), which found that the highest number of comorbidities was hypertension in 20 people (23.8%). Research (Trusda & Nilapsari, 2015) also found that the majority of patients with benign prostatic hyperplasia had blood pressure in the grade 1 hypertension group of 46.52%.

Hypertension can increase the risk of developing symptoms of benign prostatic hyperplasia by 1.5 times. The prostate gland can be affected by increased sympathetic nerve activity and α-adrenoceptor function. In benign prostatic hyperplasia, LUTS will develop as a result of excessive autonomic nervous system activity. In people with hypertension, the expression of *Vascular Endothelial Growth Factor* (VEGF) and catecholamine levels will increase. Increased expression of VEGF will cause angiogenesis and increased clinical symptoms of benign prostatic hyperplasia. Increasing catecholamine levels will inhibit apoptosis, which influences prostate gland development. Testosterone hormone levels in hypertensive people are lower than in people without hypertension. In addition, hypertension also has an inverse relationship with lower *Sex Hormone Binding Globulin* (SHBG), which is associated with higher blood pressure. Prostate gland cell proliferation can also be triggered by low levels of SHBG and testosterone (Smith Imanuel, 2023).

The results of the research showed that the type of therapy most frequently used in patients with benign prostatic hyperplasia at RSU Royal Prima was TURP, 20 people (62.5%). Research (Husni, 2016) states that for patients with benign prostatic hyperplasia, the most common type of therapy is TURP as many as 64 people (76.2%). This research is also supported by research (Roar, 2015), showing that patients with benign prostatic hyperplasia are most often given TURP therapy, and this often occurs in the 73-77-year-old age group (24.6%). *Transurethral Resection of Prostate* (TURP) is a therapy for benign prostatic hyperplasia using a *minimum intervention operative method*. It is the gold standard *(* Satriawan et al., 2021).

Conclusion

Based on the research results and discussion in this research, the researcher can conclude several research results as follows:

1. Description of age and the incidence of benign prostate enlargement at RSU Royal Prima in 2022: It was found that the highest incidence of benign prostate enlargement was in the 61 - 70 year age group, 15 people (46.9%).
2. The relationship between age and prostate volume in patients with benign prostate enlargement at RSU Royal Prima Medan in 2022 found a significant relationship between age

3. and prostate volume with a p-value of 0.023 (p<0.05). Based on the results of the ultrasound, the prostate volume size was mostly 61 - 80 ml in 15 people (46.9%).
4. The most common comorbidity in patients with benign prostate enlargement at RSU Royal Prima Medan in 2022 was hypertension in 14 people (43.8%).
5. The most common type of therapy used in patients with benign prostate enlargement at RSU Royal Prima Medan in 2022 is TURP for as many as 20 people (62.5%)..

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