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Research Article

**A CROSS-SECTIONAL RESEARCH TO ASSESS THE  
CORRELATION OF GENDER AND HYPERTENSION  
DURATION AMONG THE PATIENTS PRESENTING AN  
ONSET OF HYPERURICEMIA****<sup>1</sup>Dr. Reema Haider, <sup>2</sup>Dr. Rabia Afsheen, <sup>3</sup>Dr Salman Mashkooor**  
<sup>1</sup>Shalamar Hospital, <sup>2</sup>Sir Ganga Ram Hospital Lahore, <sup>3</sup>DHQ Gujranwala.**Article Received:** December 2018**Accepted:** February 2019**Published:** March 2019**Abstract:**

**Objectives:** In this particular research we aimed to assess the correlation of hyperuricemia with gender and hypertension duration among selected patients.

**Material and Methods:** We completed this cross-sectional research at Medicine Department of Mayo Hospital, Lahore in the timeframe of January 2017 to October 2017 on a total of 359 patients. The research sample consisted of 359 hypertension patients. We evaluated the relation of gender and hypertension with hyperuricemia among all the patients in ten months duration.

**Results:** Selected patients were in the age bracket of (30 – 70) years with an average age of (50.91 ± 12.23). A total of 150 out of 359 hypertension patients (41.78%) were reported for Hyperuricemia. In terms of gender distribution, a total of 154 hypertensive patients (42.95%) were male and 205 hypertensive patients (57.10%) were female. Female population dominated the male population. **Conclusion:** The research outcomes clearly reflect an increased hyperuricemia rate among female population in comparison to the male hypertensive patients. We also report a significant statistical relation between hypertension duration and hyperuricemia among all the hypertensive patients.

**Keywords:** Hypertension, Hyperuricemia, Stone, Urinary Tract, Hypertensive and DM (Diabetes Mellitus).

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**INTRODUCTION:**

There is no biochemical role of uric acid and it is an end product of purine metabolic system. Its initial discovery was made back in 1776 [1]. It was initially isolated from the stones of the urinary tract by Scheele (Swedish Chemist) back in 1776 [2]. Hypouricemia is a common issue of hypertensive male and female patients. The presence of hyperuricemia has a close link with hypertension initiation among patients [3]. Moreover, hypertension also increases the hyperuricemia frequency among patients.

In the recent research studies, the fact of hyperuricemia involvement in cardiovascular disease is also under discussion [4]. Therefore, it is critical to control hyperuricemia for hypertension treatment. Hypertension and chronic heart failure require diuretics as management therapy which reportedly induces an onset of hyperuricemia. Therefore, combinational and safer management of diuretics possibly helps in the prevention of treatment associated onset of hyperuricemia. Hypertension management, especially among the patients with hyperuricemia, needs proper drug and dose selection that does not affect, reduce or influence uric acid concentration one way or the other [4]. Therefore, we aimed to assess the correlation of hyperuricemia with gender and hypertension duration among selected patients.

**MATERIAL AND METHODS:**

We completed this cross-sectional research at Medicine Department of Mayo Hospital, Lahore in the timeframe of January 2017 to October 2017 on a total of 359 patients. The research sample consisted of 359 hypertension patients. We evaluated the relation of gender and hypertension with hyperuricemia among all the patients in ten months duration. Selected patients were in the age bracket of (30 – 70) years with an average age of (50.91 ± 12.23). We did not include any patient of gout, extra-articular hyperuricemia features, secondary hypertension, renal disease, intake of thiazide and loop diuretics. Institutional permission and patient's informed consent was also taken before the research commencement.

Every patient gave blood fasting sample (5 ml) for clinical investigation of uric acid. The analysis was made on an automated chemical analyzer and the measurement unit was (mg/dl). A value of ( $\geq 7.0$ )

mg/dL fasting blood uric acid was taken as hyperuricemia. Every detail was documented about the demographic profile of the patients on a Performa. The researcher made a statistical analysis on SPSS software. Hypertension duration and age were quantitative variables which were measured in (Mean ± SD). Hyperuricemia frequency and gender were qualitative variables and these variables were measured in number and percentage. Hyperuricemia was measured with the help of Pie chart. We also carried out stratification for hypertension duration, gender and age in order to compare their effect for various other variables. Lastly, we also made post stratification through the Chi-Square Test with a significant PValue of ( $\leq 0.05$ ).

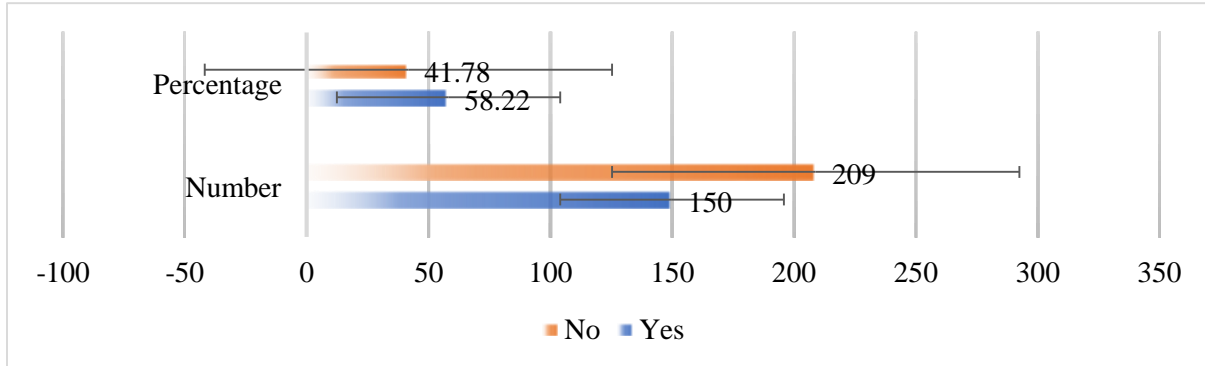
**RESULTS:**

Selected patients were in the age bracket of (30 – 70) years with an average age of (50.91 ± 12.23). A total of 150 out of 359 hypertension patients (41.78%) were reported for Hyperuricemia. In terms of gender distribution, a total of 154 hypertensive patients (42.95%) were male and 205 hypertensive patients (57.10%) were female. Female population dominated the male population. Among 359 patients the average hypertension duration was (18.84 ± 9.9) years. We generally made age stratification for (30 – 55) years and (56 – 70) years of age groups respectively including 219 and 96 140 patients with respective proportions of 61% and 39%. Hyperuricemia was reported in both groups respectively in 96 and 54 patients having respective proportions of 43.84% and (38.57%). There was no significant link between hyperuricemia and age (P-Value = 0.380). Whereas, a higher significance was reported between hyperuricemia and gender (P-Value = 0.000). Minimum and maximum hypertension duration were respectively one year and forty-one years. Hypertension duration was also measured in two groups having (1 – 20) years and (21 – 41) years respective hypertension duration. A total of 50 patients were hypertensive (32.26%). In the hypertension duration bracket of (21 – 41) years 100 out of 204 patients presented hyperuricemia (49%). There was a significant relationship between hyperuricemia and disease duration (P-Value = 0.002).

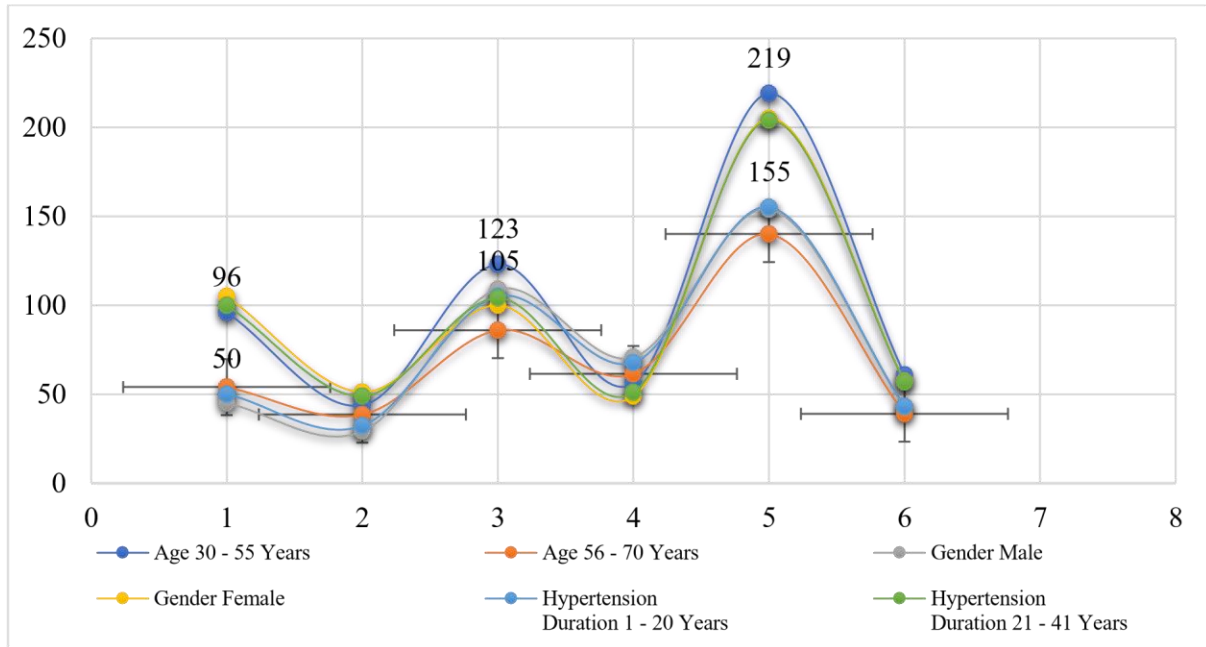
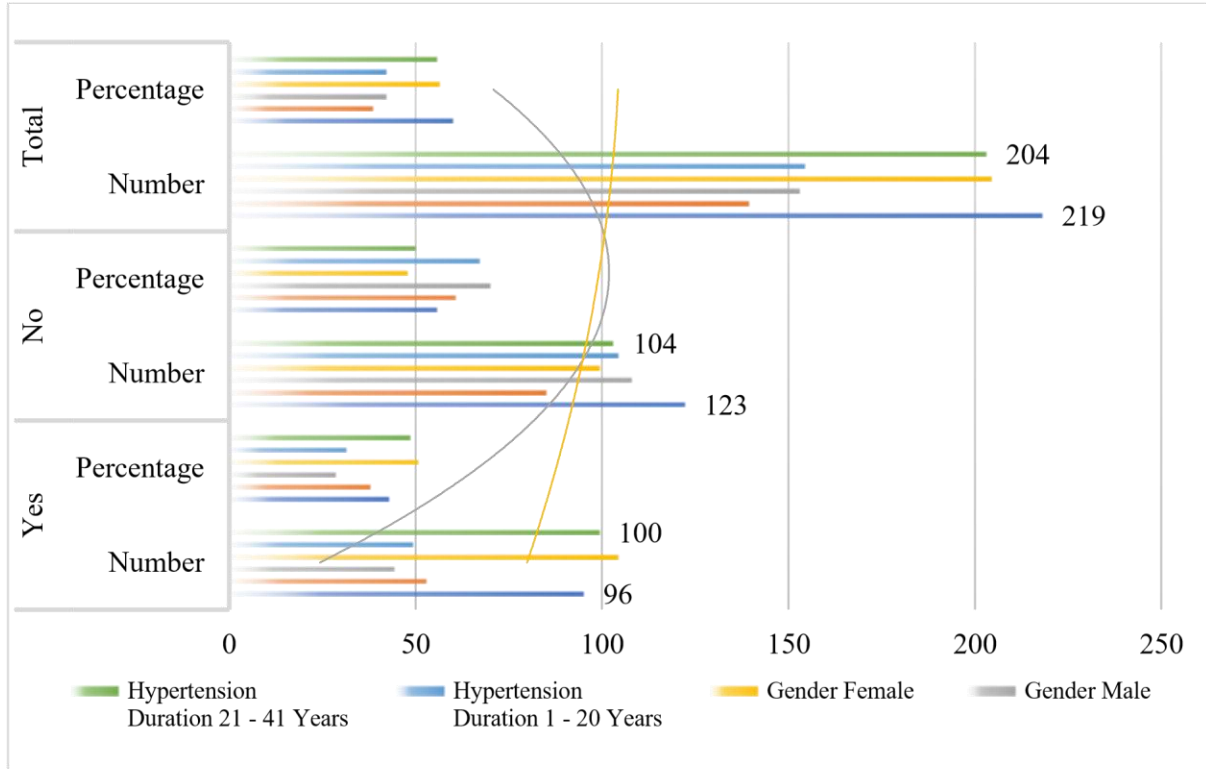
Detailed outcomes analysis is available in the given tabular and graphical presentation (Table – I & II).

**Table – I:** Hyperuricemia Frequency

Hyperuricemia	Number	Percentage
Yes	150	58.22
No	209	41.78

**Table – II:** Gender, Age and Hypertension Duration Stratification

Age, Gender and Hypertension Duration		Yes		No		Total		P-Value
		No	%	No	%	No	%	
Age	30 – 55 Years	96	43.8	123	56.2	219	61.0	0.380
	56 – 70 Years	54	38.6	86	61.4	140	39.0	
	Total	150	41.8	209	58.2	359	100.0	
Gender	Male	45	29.2	109	70.8	154	42.9	0.000
	Female	105	51.2	100	48.8	205	57.1	
	Total	150	41.8	209	58.2	359	100.0	
Hypertension Duration	1 – 20 Years	50	32.3	105	67.7	155	43.2	0.002
	21 – 41 Years	100	49.0	104	51.0	204	56.8	
	Total	150	41.8	209	58.2	359	100.0	



**DISCUSSION:**

Hyperuricemia has a strong relation with hypertension [5]. The uric acid possible pathogenic role and mechanism in hypertension is not fully understood but even then it includes endothelial nitric oxide reduction and also stimulates the expression of renin [6]. Hyperuricemia poses harmful effects on platelets

adhesion and aggregation, endothelial function and oxidative metabolism as well [7]. It also exercises hyperuricemia inducing mechanisms. It is capable to reduce the renal blood flow rate which stimulates microvascular/capillary tissue ischemia and urate reabsorption. Microvascular/capillary tissue ischemia may cause increased lactates production that blocks or

inhibits secretion of urate in proximal tubes, increased the xanthine oxidase production and purine breakdown which leads to increased production of urate and the enhanced onset of hyperuricemia [8].

We calculated an average age and average hypertension duration respectively as  $(50.91 \pm 12.23)$  years and  $(18.84 \pm 9.9)$  years which same as reported in a research conducted by a local author Ahmed and his colleagues [9]. We reported that females were more involved in the incidence of hyperuricemia than males. In the total hypertensive patients, the hyperuricemia patients were about 41.78%. Ahmed reported 37.4% of hypertensive patients presenting hyperuricemia; moreover, these outcomes are also similar to our reported outcomes [9]. Schmidt also reported the common frequency of hyperuricemia in patients who presented hypertension (20.1%) in comparison to the patients who did not present any sign of hypertension (6.7%) in series [10]. The outcomes presented by Schmidt are not concurrent with the outcomes of this particular research study. Afifi also reported 55.4% frequency of hyperuricemia among hypertensive patients [11]. Rahman reported 40.3% frequency of hyperuricemia among hypertensive patients [12]. Our research outcomes are in agreement with the outcomes presented by Afifi and Rahman [11, 12].

According to the research outcomes of Poudel the prevalence of hyperuricemia was 28.8% among hypertensive patients; whereas, in the research outcomes of Kashem and Sachdev the prevalence of hyperuricemia was respectively 25.4% and 13.5% among hypertensive patients [13 – 15]. The outcomes presented by Poudel, Kashem and Sachdev are not in agreement with the research outcomes presented in our series [13 – 15]. Afifi presented no significant association of hyperuricemia to age; whereas we reported a significant link between both variables with a significant P-Value of ( $< 0.05$ ) [11].

### CONCLUSION:

Both early and older age groups of females are more involved in hyperuricemia. Moreover, hypertension duration is significantly correlated with the increased level of uric acid. The research outcomes clearly reflect an increased hyperuricemia rate among female population in comparison to the male hypertensive patients. We also report a significant statistical relation between hypertension duration and hyperuricemia among all the hypertensive patients.

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