

Research Article

Quantitative Cross-Sectional Study to Assess the Frequency of Hyperuricemia in Southern Punjab, Pakistan

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Abstract

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Uric acid is a sort of compound that is produced as a result of purine metabolism. Hyperuricemia (HU) is a condition that is firmly related to gout, which is the type of incendiary joint pain, by the crystallization of uric corrosive inside the joints. The purpose of this study was to assess the frequency of HU in southern Punjab, Pakistan. A total of 1792 patients were recruited using inclusion criteria. Descriptive analysis was performed with SPSS software version 23. The frequency of patients with hyperuricemia was calculated. The frequency of Hyperurecemic patients was higher than the diabetic patients. The frequency of Hyperurecemic patients was higher in Bahawalpur (54%) followed by Khanewal (50%) and Kabir wala (48%). In conclusion, Hyperuricemia in individuals combined with obesity and overweight increasing day by day and it is an area of most importance. Early intervention can prevent this age group from serious health issues later in life.

Keywords: Hyperuricemia, Descriptive analysis, Diabetes, Obesity

Introduction

Uric acid is a sort of compound that produce as a result of purine metabolism. Purines are regularly made in the body and are additionally found in certain nourishments and beverages (Álvarez-Lario and Macarrón-Vicente, 2010). Uric acid (UA) is the principal metabolite of purine digestion when purines are broken into uric corrosive in the blood, the body disposes of it when you pee or have a solid discharge (Maiuolo *et al.*, 2016, Sorensen and Levinson, 1975).

Hyperuricemia (HU) is the result of uric corrosive and makes excretory awkwardness. Hyperuricemia is an expanded degree of uric corrosive in the blood (Doehner and Anker, 2005). The typical maximum breaking point of UA is 6.8mg/dL, and anything more than 7 mg/dL is viewed as immersed, and indications can happen. This raised level is because of expanded creation, diminished discharge of uric corrosive, or a blend of the two procedures. An expanded uric corrosive

level can likewise be found in raised purine corruption, in high cell turnover states (hemolysis, rhabdomyolysis, and tumor lysis), and diminished discharge (renal inadequacy and metabolic acidosis) (Tatli *et al.*, 2008, Leyva *et al.*, 1997, Andrikou *et al.*, 2018).

The pervasiveness of HU in grown-ups has astoundingly expanded in the course of the most recent a very long while, particularly in created nations (Desideri *et al.*, 2018). Hyperuricemia is related to suppers, way of life, sexual orientation, and past utilization of diuretics. High uric corrosive levels have been customarily viewed as a hazard factor for gout (Meier *et al.*, 2020).

Hyperuricemia (HU), or expanded serum uric corrosive (SUA), is a condition that is firmly related to gout which is the type of incendiary joint pain by the crystallization of uric corrosive inside the joints (Meier *et al.*, 2020). Hyperuricemia is expected to nonfunctioning uricase quality and is a wellspring of hazard for cardiovascular maladies (CVDs) and kidney disease (Martinon *et al.*, 2006).

The main objective of this study was to assess the frequency of HU in major cities of

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southern Punjab, Pakistan. The prevalence of hyperuricemia in male adults with metabolic syndrome was increased and a large difference in prevalence of metabolic syndrome also existed in those with hyperuricemia compared with normouricemia.

Materials and methods

Study design and settings

The survey for this study was conducted in the shape of camps conducted by Pharm Evo (Pvt.) limited Pakistan in various hospitals and clinics all over South Punjab. The Areas included in this survey were Khanewal (City), Chishtian (Adam Ghee Mills), Mian Channu (Tehsil Headquarter Hospital), Kabirwala (City), Jahanian (City), Vehari (City), Bahawalpur (DHQ), Rahim Yar Khan (DHQ), D.G Khan (DHQ), Ali Pur (City), Layyah (DHQ), Shujabad (City), Jalalpur Pirwala (City) and Jampur (THQ). Uric acid screening camps were conducted at various Private clinics, THQ Hospitals and DHQ Hospitals.

Recruitment of participants

A total of 1792 patients was screened and taken uric acid levels including males and females for different age groups. Diabetes was taken as a co-morbidity disease. Doctors at every camp investigated the symptoms of

the patients. Uric acid levels were assessed by using UASure Blood Uric Acid Monitoring System. Those with greater than 6.7 mg/dl were classified as hyperuricemia according to the American College of Rheumatology.

Ethical consideration

Pharmacy Ethical Committee (PEC) has recruited this project and reviewed all aspects of an ethical issue. PEC was approved the above-mentioned research study in meeting vide number 191/PEC/2020 dated 3-9-2020.

Statistically analysis

Descriptive analysis was performed with SPSS software version 23. The frequency of patients with hyperuricemia was calculated. Stratification concerning gender and age was calculated via cross-tabulation.

Results

A total of 1792 patients were recruited in the study. The frequency of Hyperurecemic patients was higher than the diabetic patients. The frequency of Hyperurecemic patients can be seen in figure 1. The frequency of Hyperurecemic patients was higher in Bahawalpur (54%) followed by Khanewal (50%) and Kabir wala (48%) as shown in Table 1.

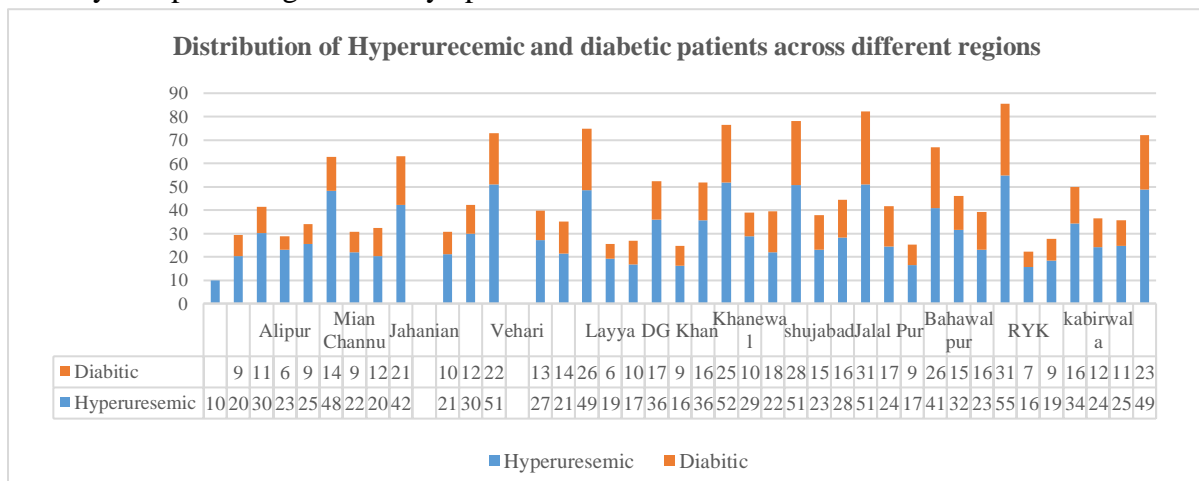


Figure 1: Distribution of Hyperurecemic and diabetic patients across different regions

Table 1: distribution of hyperuricemic and diabetic patients across different regions

| Region | Gender | Hyperuricemia | Diabetic |
|------------|--------|---------------|----------|
| Chishtian | Male | 9.8 | 2.5 |
| | Female | 20.3 | 8.9 |
| | Total | 30.1 | 11.4 |
| Alipur | Male | 22.9 | 5.9 |
| | Female | 25.4 | 8.5 |
| | Total | 48.3 | 14.4 |
| MianChannu | Male | 21.8 | 9.03 |
| | Female | 20.3 | 12.02 |
| | Total | 42.1 | 21.05 |
| Jahanian | Male | 21.2 | 9.5 |
| | Female | 29.9 | 12.4 |
| | Total | 51.1 | 21.9 |
| Vehari | Male | 27.2 | 12.5 |
| | Female | 21.3 | 13.9 |
| | Total | 48.5 | 26.4 |
| Layyah | Male | 19.3 | 6.2 |
| | Female | 16.6 | 10.3 |
| | Total | 35.9 | 16.5 |
| DG Khan | Male | 16.1 | 8.7 |
| | Female | 35.6 | 16.1 |
| | Total | 51.7 | 24.8 |
| Khanewal | Male | 28.9 | 9.9 |
| | Female | 21.8 | 17.6 |
| | Total | 50.7 | 27.5 |
| shujabad | Male | 22.9 | 14.8 |
| | Female | 28.2 | 16.3 |
| | Total | 51.1 | 31.1 |
| Jalal Pur | Male | 24.4 | 17.3 |
| | Female | 16.5 | 8.7 |
| | Total | 40.9 | 26 |
| Bahawalpur | Male | 31.6 | 14.5 |
| | Female | 23.1 | 16.2 |
| | Total | 54.7 | 30.7 |
| RYK | Male | 15.7 | 6.5 |
| | Female | 18.5 | 9.3 |
| | Total | 34.2 | 15.8 |
| kibirwala | Male | 24.03 | 12.4 |
| | Female | 24.8 | 10.9 |
| | Total | 48.83 | 23.3 |

Prevalence of Hyperuricemia in South Punjab Region

The total of patient participated in all camps was 1792. The frequency of Hyperurecemic patients was 822 (45.9%). The prevalence of hyperuricemia was the same in both genders (male vs female: 23.2% vs 22.7%). The detail is given in Table 2.

Table 2: Duration of Camps – 11-04-19 to 30-09-2019 (48 Camps)

| | | |
|---------------------------|------|------|
| Patients | 1792 | |
| Male Hyperuricemic | 415 | 23.2 |

| | | |
|-----------------------------|-----|------|
| Female Hyperuricemic | 407 | 22.7 |
| Total Hyperuricemic | 822 | 45.9 |
| Diabetic Male | 211 | 11.8 |
| Diabetic Female | 199 | 11.1 |
| Total Diabetic | 410 | 22.9 |

Discussion

In the above survey, which was conducted in various areas of the South Punjab Region of Pakistan, the Prevalence of Hyperuricemia was concluded as 45.9%. Moreover, it was also observed that the prevalence of Hyperuricemia was found common in

diabetic patients rather than general. Similarly Hypertensive patients, chronic kidney patients, fatty liver disease patients, and Cancer patients it has been observed that all types of diseases cannot be controlled if there is poor control of Hyperuricemia. This type of work will promote the view that the addition of this study will help the available data on the Hyperuricemia prevalence. Hyperuricemia prevalence in South Punjab can be compared to the national prevalence which was observed 39% according to a study that was published by Qudwai in 2017 (Qidwai and Jawaid, 2017).

The average uric acid of males was 6.13 ± 1.64 mg/dl. The females were documented as 6.05 ± 1.74 mg/dl. The mean uric acid level was 6.13 ± 1.64 in males and 6.05 ± 1.74 in females. Qudwai observation defines it as 5.93 ± 1.57 . From this analysis, we found that the occurrence of Hyperuricemia is more in females (49.8%) in Pakistan, which was also according to our study, which had an occurrence of Hyperuricemia in females (48.6%) as likened to males (50.9%). The South Asian countries have shown a constantly increasing trend for the occurrence of Hyperuricemia with China viewing occurrence as high as 26%, Indonesia with 18%, and Taiwan as high as 53% (You *et al.*, 2014, Darmawan *et al.*, 2017). India was an occurrence of 44.8% by the view of research which was conducted in 2012 (Trinchieri and Montanari, 2017).

This trend indicates that a high occurrence of hyperuricemia can be attributed to increasing age, which means an increase in the number of years with chronic conditions like hypertension and diabetes (Conen *et al.*, 2004). Other reasons for this increasing prevalence of hyperuricemia in a developing country like India and Pakistan may be

recent changes in, sedentary lifestyle, diet, antihypertensive drugs mainly diuretics and medications. anti-hyperuricaemic drugs such as allopurinol and febuxostat (Conen *et al.*, 2004, Trinchieri and Montanari, 2017).

Previous studies showed that our research favors the suggested relation between hypertension, MetS, obesity, and UA (Hussain *et al.*, 2015, Sunjaya and Sunjaya, 2018, Bawazier *et al.*, 2020). Further studies should explain the exact causal relationship. With regards to renal damage, not only SUA but also this is important that how SUA increases (Uchida *et al.*, 2018, Sola *et al.*, 2015). We can conclude that SUA is an independent risk factor of all-causes of mortality in both genders males and females: As described earlier, SUA is produced from xanthine and hypoxanthine up-stream and excreted in the urine and feces (Lebovitz and Melander, 2003). When we study the serum concentrations and metabolites of urinary excretion and precursors more thoroughly, are causes of Hyperuricemia among the individuals could be differentiated. This theory could lead to a more justified strategy for the reduction of SUA in each individual (Lebovitz and Melander, 2003, Yu *et al.*, 2018).

Conclusion

In conclusion, Hyperuricemia in the youngest is rottenly combined with obesity and overweight and it is an area of most importance. Early intervention can prevent this age group from serious health issues later in life. Lifestyles and pharmacological treatments have been changed during the last few years, and it would be very important and interesting to confirm these results in future studies. As the knowledge has expanded in this field, lowering of SUA in subgroups at high risk should be performed,

which may provide firm answers to the role of SUA in cardiovascular events.

Recommendations

From research findings following recommendation should be considered. As cases of drug joint pain due to HU are increasing day by day the government should arrange or conduct educational seminars to acknowledge the hazardous effects of HU.

Conflict of interest

All the authors declare that they have no conflict of interest.

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