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Research Article

**A CROSS-SECTIONAL ANALYSIS OF PATIENTS OF
CHRONIC KIDNEY DISEASE IN A TERTIARY CARE
HOSPITAL OF LAHORE**¹Dr Danyal Amin, ²Dr Nasiruddin, ²Dr Samiullah¹Jinnah Hospital Lahore²Alnafees Medical College and Hospital**Article Received:** June 2020**Accepted:** July 2020**Published:** August 2020**Abstract:**

Background: Chronic Kidney Disease (CKD) is an important global health concern, whose prevalence is on the rise. The most important risk factors include high blood pressure, diabetes mellitus, old age and obesity.

Methods: Cross-sectional analysis of indoor patients of the department of medicine and nephrology. Patients attending the outpatient department of nephrology were also included. 80 patients were interviewed using questionnaires.

Results: 71.1% and 48.9% of the patients were hypertensive and diabetic. 53.3% used traditional medication (hakeem medication). The studied population had a mean age of 45.5 ± 16.4 with approximately 58% male patients.

Conclusions: The research found out that most patients with CKD had hypertension. Alarmingly, the blood pressure was poorly controlled. To avoid overburdening of the healthcare facilities of this developing country, patients should be educated to control their blood pressure and blood glucose to delay or prevent the kidney damage and limit its progression.

Keywords: Chronic kidney disease, risk factors, diabetes, hypertension (high blood pressure).

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INTRODUCTION:

CKD is defined as abnormal renal function or structure which lasts for more than 3 months. The patients may be characterized by an eGFR of less than 60ml/min/1.73m² on at least 2 occasions 90 days apart. Other markers of kidney disease may include hematuria, albuminuria (ACR>3), renal histological abnormalities, a history of kidney transplantation and structural abnormalities found on ultrasonography¹. The patients are classified into 5 categories based on the estimated GFR from G1 to G5, with G5 referring to kidney failure. Recently, a classification based on albuminuria has also been introduced from A1 to A3, with A3 having the highest albumin creatinine ratio.¹

The number of CKD patients is rising globally with 571414 patients having the disease in the United States² and a prevalence of 12.5% in Pakistan.³

Studies suggest that diabetes mellitus, smoking, hypertension, male gender, old age, hyperlipidaemia, HIV infection, metabolic syndrome, hepatitis C infection, nephrotoxic medicines and decreased levels of vitamin D increase the risk of developing chronic kidney disease^{4,5}. A research conducted in Benin city found out that 33.5% of the city's population had hypertension and 18.2% was obese.⁴ Those with diabetes and hypertension are more likely to get the disease, with a 2- and 1.69-fold higher likelihood of the disease in the diabetics and hypertensives. There is a 4% increase in the risk of developing chronic kidney disease with each year of life⁶.

It has been found out that the eGFR tends to decrease with age. Therefore, the definition of CKD should be adjusted by age. A study by Pierre et al suggested that the cut off limit of eGFR should be 75ml/min/1.73m² in individuals younger than 40 years of age and the lower level of eGFR should be 45ml/min/1.73m² in individuals older than 60 years of age⁷.

The rising number of CKD patients demands that individuals should be screened for the common risk factors like hypertension and diabetes. That being said, a very tight glycaemic once ESRD has developed offers no improvement in survival. Education of the patients as well as general practitioners can enhance patient's compliance and co-ordination between general physicians and nephrologists ensuring timely referrals.

Objective: To analyse the various characteristics and co-morbidities in patients having CKD in order to detect which factors are the most important.

METHODOLOGY:

A cross-sectional study carried out on the indoor patients of the departments of nephrology and medicine as well as those attending the nephrology outdoor clinic in a tertiary care hospital of Lahore during the month of May and were known cases of chronic kidney disease. The total number of patients selected were 90 through purposive sampling. There was no randomisation in the selection. Those individuals who were less than 14Y and those who opted not to participate were excluded.

Operational definitions:

Chronic kidney disease: CKD is defined as abnormal renal function or structure which lasts for more than 3 months. The patients may be characterized by an eGFR of less than 60ml/min/1.73m² on at least 2 occasions 90 days apart. Other markers of kidney disease may include hematuria, albuminuria (ACR>3), renal histological abnormalities, a history of kidney transplantation and structural abnormalities found on ultrasonography¹

Diabetes mellitus: a fasting blood glucose of 126mg/dl or higher, or taking medicines for diabetes.

Hypertension: persistently high blood pressure, the cut off limit is 140mmHg for systolic and 90mmHg for diastolic or taking medicines to control blood pressure.

Data collection and analysis:

Patients were questioned about the various risk factors like hypertension, diabetes, any ischemic heart disease, stroke or transient ischemic attacks, usage of hakeem medication, compliance with medicine, any history of autoimmune disease or a history of kidney disease since childhood. The data was analysed by IBM SPSSv18.

RESULTS:**Demographic variables of the population:**

The studied patients had their ages between 16 and 81; mean age was 45.5Y (SD 16.4). Almost three quarters of the individuals were in the 31-70Y age bracket. Slightly more male patients were found during our visits to the wards, i.e. 57.7%. Majority of the population had no formal education (30%), whereas a similar proportion had only read up to class 5 (28.9%). Nearly half of the patients were from Lahore, while 14% came from Okara district and the rest came from other cities. As regards the occupation, majority of male patients were labourers. Housewifery was the major occupation amongst women.

Clinical data of the patients:

As far as the hypertensive or normotensive status of the patients is concerned, 30% were normotensive,

3% had well controlled blood pressure and the remaining 67.8% had uncontrolled to poorly controlled blood pressure. 48.9% of the individuals were diabetic, of which the majority had poorly controlled blood sugar. 40% reported that they had high serum lipid levels whereas 60% were not aware of their levels. 38.9% had occasionally used Hakim medication (traditional alternative medicine) and

14.4% frequently took these medicines. 17% smoked frequently, 10% had moderate tobacco consumption and 6.6% others smoked occasionally. 55% of the patients said they were regular in taking medicine. Around one quarter said that they had recurrent infections of the urinary tract. 31% had coronary artery disease, while 21% suffered from cerebrovascular accident.

Table 1. Demographic variables of the studied population. (n=90)

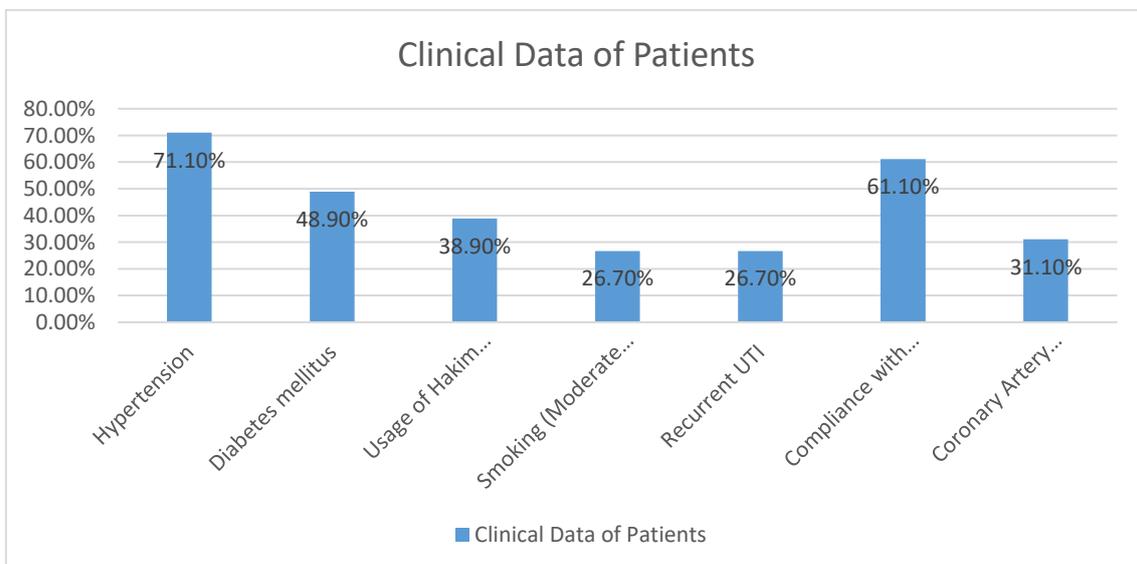
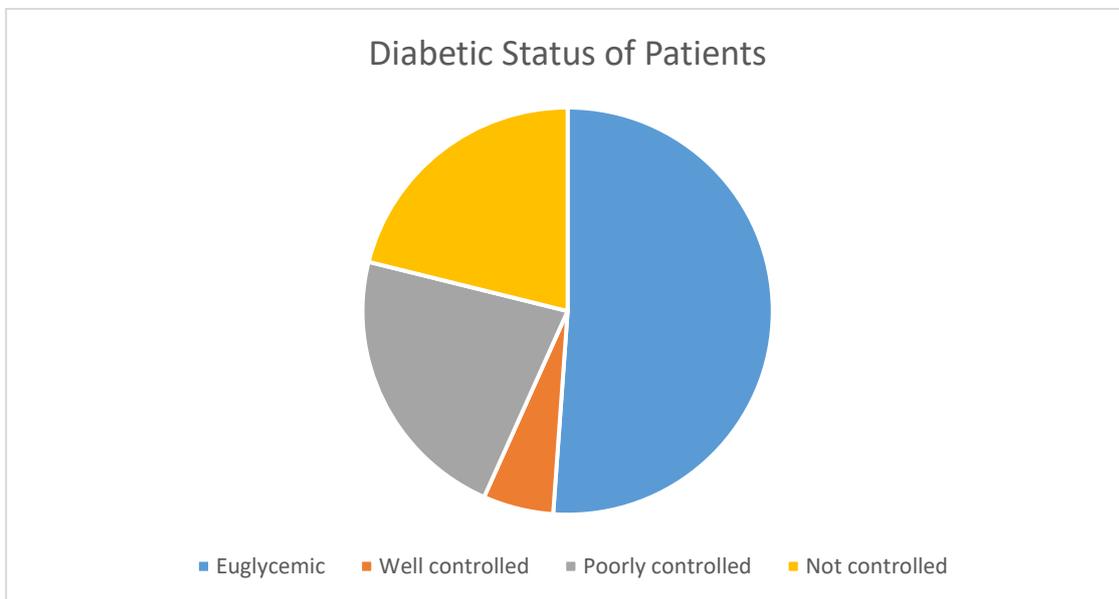
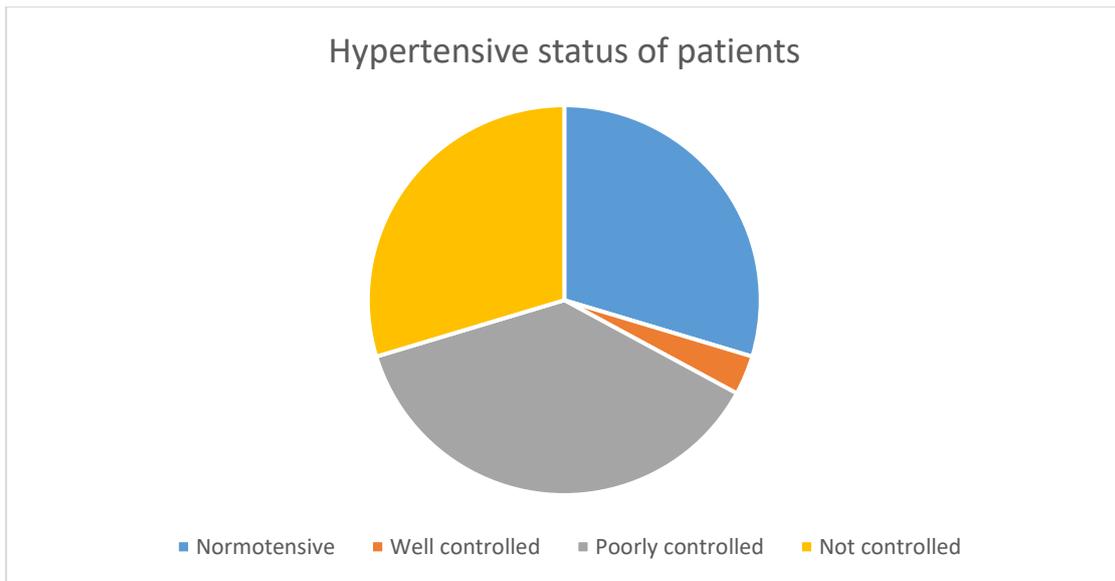
Variable	n(%age)
Gender	
Male	52 (57.7)
Female	48 (43.3)
Age	
11-20	5 (5.5)
21-30	12 (13.3)
31-40	20 (22.2)
41-50	15 (16.6)
51-60	17 (18.8)
61-70	15 (16.6)
71-80	5 (5.5)
81-90	1 (1.1)
Education	
No formal education	27 (30)
Primary	26 (28.9)
Middle	14(15.5)
Matriculate/ O level	11 (12.2)
Intermediate/ A level	5 (5.5)
Graduation and higher	3 (3.3)
Islamic Education.	4 (4.4)
Marital status	
unmarried	16 (17.8)
married	74 (82.2)
Residence	
Lahore	44 (48.9)
Okara	13 (14.4)
Pakpattan	5 (5.5)
Kasur	5 (5.5)
Sialkot, Gujranwala and others	23 (25.5)

Table 2. Gender wise occupation of patients. (n=52 for males and n=48)

Occupation	Male n(%age)	Female n(%age)
Housewife	N/A	42(87.5)
Labour	20 (38.4)	----
Shop	7 (13.5)	----
Others (driving, hawking)	8 (15.4)	----
Student	3 (5.7)	3 (6.25)
Farmer	5 (9.6)	----
landlord	1 (1.9)	----
Jobless and retired	6 (11.5)	----
Teacher	2 (3.8)	3 (6.25)

Table 3. Clinical characteristics of the studied population (n=90)

Characteristic	Frequency	Percentage
Hypertension		
Normotensive	27	30
Well controlled	3	3.33
Poorly controlled	34	37.8
Not controlled	27	30
Total hypertensive patients	64	71.1
Diabetes mellitus		
Euglycemic	46	51.1
Well controlled	5	5.55
Poorly controlled	20	22.2
uncontrolled	19	21.1
Total diabetic patients	44	48.9
Unaware of status	36	40
Hyperlipidemia	54	60
Usage of alternative medicine		
Frequent	35	38.9
Occasional	13	14.4
No usage	42	46.7
Ischemic heart disease	28	31.1
Stroke or transient ischemic attack	19	21.1
Smoking		
Occasional	6	6.67
Moderate	9	10
Heavy	15	16.7
Compliance with treatment		
Yes	55	61.1
No	35	38.9
Recurrent UTI	24	26.7
Childhood kidney disease	3	3.3



DISCUSSION:

Few studies have been done on the risk factors of chronic renal disease in Lahore. A cross-sectional study conducted in Karachi showed that the prevalence of CKD was 12.5%. 74.4%, 41.8% and 12% of the patients also had high blood pressure, diabetes mellitus and coronary artery disease respectively³. Another study carried out in Karachi revealed that the prevalence of CKD was 16.6%, 69.4% of the patients were hypertensive while 34.6% were diabetic¹¹. In this study, 71.1% of kidney patients were hypertensive, whereas 46% were diabetic. Since this study was carried out only on the patients and not the general population, the prevalence of the disease could not be found.

The mean age of patients in our study was 45.5Y (SD 16.4), which was significantly lower than the mean age in Karachi and India i.e. 58.8Y (SD 12.3) and 52.73 (SD 17.08) respectively^{3,6}. Notably, just under a quarter of patients in our study had their ages between 31 and 40Y.

A high proportion of individuals belonged to a poor socioeconomic status which was depicted by their occupation. Around 40% of the male patients were labourers. This could be explained by the fact that the affording patients tend to visit private hospitals due to the poor condition of public sector hospitals.

The proportion of patients who regularly took their medicines was 61.1% which was slightly lesser than the compliance in Nigeria¹². However, since the patients were directly interviewed, the actual compliance could have been lower as patients usually do not admit the fact that they are non-compliant especially when asked by a doctor.

A study suggests that a deficiency of vitamin D is associated with chronic kidney disease. However, vitamin D levels are not usually carried out in patients of public sector hospital unless there is some compelling indication because of the high cost and the fact that it has no role in altering the management of these patients. Therefore, this study could not study the association between vitamin D and chronic renal disease.

In spite of the fact that hypertension is a major risk factor, a few patients reported that their blood pressure was well controlled i.e. 3.3%. This figure was considerably lesser than the statistics in Karachi i.e. 20%³. A point of concern is that there was no blood pressure monitoring chart to confirm the blood pressure control.

As far as tobacco smoking is concerned, 26.7% of the patients smoked moderately to heavily. This was higher than the proportion in India i.e. 12.2%⁶, but

considerably less than the fraction in Karachi i.e. 37%³.

That being said, this study had some limitations as well. Firstly, the patients came from a variety of nearby as well as distant areas and were not limited to the Lahore region. Secondly, there were investigations carried out to check the eGFR or Albumin creatinine ratio to verify the diagnosis and this study relied on the existing diagnoses of patients. However, this approach could be justified as the diagnoses are made by certified nephrologists of the hospitals.

CONCLUSION:

The research found out that most patients with CKD had concomitant hypertension and diabetes. Alarmingly, the blood pressure and glucose levels were poorly controlled. To avoid overburdening of the healthcare facilities of this developing country, patients should be educated to control their blood pressure and blood glucose to either prevent or at least delay the kidney damage and limit its progression.

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