



ASSESSMENT OF RISK FACTORS IN CHRONIC KIDNEY DISEASE PATIENTS AT TERTIARY CARE HOSPITAL IN NELLORE

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Abstract

The purpose of this study is to evaluate the different risk variables in Nellore patients with chronic renal disease. Method: From November 2025 to March 2026, a six-month prospective observational study was carried out. The patient's demographic chart and kidney health assessment questionnaire were used to gather the data, which was then examined using descriptive statistics. The chi-square test and correlation were used to determine the primary risk factor. Results: According to the current study, the main risk factor for both males and females is hypertension ($p=0.0001$), however other risk factors such diabetes, obesity, and alcohol use are also important. It was discovered that the average age of CKD patients was 46.24 for females and 49.02 for men. Conclusion: In both males and females with chronic renal disease, hypertension was identified as the primary significant risk factor. However, compared to women, men are more likely to have hypertension as a risk factor for chronic renal disease. These chronic kidney diseases are also influenced by other risk factors such diabetes mellitus, smoking, alcohol, obesity, hypotension, stroke, urinary tract infections, drug-induced nephrotoxicity, etc. The prevalence of end-stage renal disease can be decreased by identifying the main risk factors.

Keywords: chronic kidney disease, anemia, . Human leukocyte antigens.

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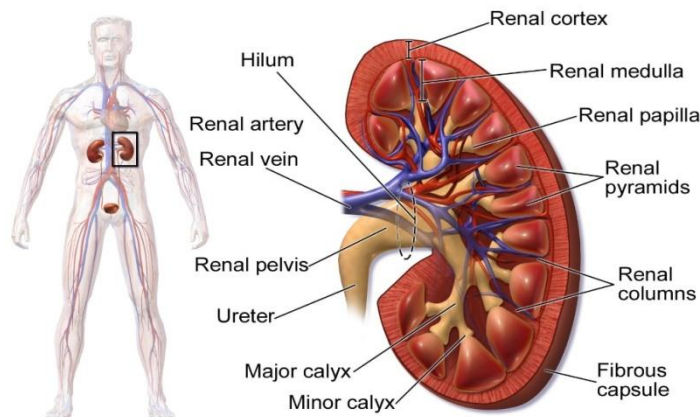
INTRODUCTION

Kidney damage or decreased kidney function that lasts three months or more is known as chronic kidney disease (CKD), and it is both irreversible and progressive. Conditions that harm the kidneys and impair their capacity to filter urine are included in CKD. Wastes can accumulate to high amounts in the blood and cause illness if kidney disease worsens. Hypertension, diabetes mellitus, alcoholism, smoking, obesity, drug-induced nephrotoxicity, urinary tract infections, and other conditions are the main risk factors for chronic kidney disease (CKD). High blood pressure, anaemia (low blood count), weak bones, poor nutrition, and nerve damage are among the complications that can arise. Additionally, renal illness raises the risk of heart and blood vessel disease. These issues could develop gradually over time. Kidney failure, which necessitates dialysis or a kidney transplant to sustain life, may eventually result from the progression of kidney disease [3].

EPIDEMIOLOGY

Between 1.9 and 2.3 million Americans suffer with CKD. According to the Centers for Disease Control and Prevention, 16.8% of adults 50 years of age and older have CKD. According to a 2013 study, 8.8% of people in Great

Britain and Northern Ireland have symptomatic CKD. ESRD in India is estimated to affect 729 people per million, and only 10% of patients receive renal replacement therapy. CKD is a major concern among African Americans, primarily because of the increased prevalence of hypertension. For instance, high blood pressure is responsible for 37% of ESRD cases in African Americans and 19% in Caucasians. Human leukocyte antigens (HLA) may be more prevalent in American serum. High HLA concentrations can raise systemic inflammation, which may indirectly increase the risk of kidney disease.



Kidney Anatomy

Figure 01: Anatomy of the kidney

SIGNS AND SYMPTOMS OF CKD:

Signs and symptoms of CKD develop over time if kidney damage progresses slowly. Signs and symptoms of kidney disease may include:

- Vomiting
- Nausea
- Loss of appetite
- Fatigue and weakness
- Sleep problems
- Decreased urine output
- Decreased mental sharpness
- Muscle twitches and cramps
- Hiccups
- Swelling of feet and ankles
- Trouble concentrating
- Feel more tired and have less energy
- Persistent itching
- Puffiness around your eyes, especially in the morning
- Chest pain, if fluid builds up around the lining of the heart
- Shortness of breath, if fluid builds up in the lungs
- Family history of kidney failure
- Old age

CLASSIFICATION OF CKD

Table 01: Classification of CKD

STAGES	DESCRIPTION	GFR(ml/min/1.73m ²)
Stage 1	Kidney damage with normal or increased GFR	≥90
Stage2	Kidney damage with mild decreased GFR	60-89
Stage3	Moderate decreased GFR	30-59
Stage4	Severe decreased GFR	15-29
Stage 5	Kidney failure	<15

A GFR below 60 for three months or more or a GFR above 60 with kidney damage indicates CKD.

RISK FACTORS FOR CKD

- Susceptibility factors: Increase susceptibility to kidney damage
Example: Older age, Family history of CKD, reduction in kidney mass, low birth weight.
- Initiation factors: Directly initiate kidney damage.
Example: Diabetes, high blood pressure, auto immune diseases, systemic infections, urinary tract infections, lower
- Urinary tract obstruction, urinary stones, drug toxicity.
- Progression factors: Cause worsening kidney damage and faster decline in kidney function after initiation of kidney damage.
Example: Higher level of proteinuria, higher blood pressure, poor glycemic Control in Diabetes, Smoking.
- End-stage factors: Increase morbidity and mortality in kidney failure
Example: Temporary vascular access, anemia, lower serum albumin level.

AIM & OBJECTIVES

Aim of the Study

This study is designed to assess the various risk factors in CKD patients in Nellore.

Objectives of The Study

To know the major risk factors that causes CKD.

To reduce the prevalence of end stage renal disease and death.

To improve our understanding mechanism associated with the increased risk seen in people with progressive CKD.

To identify complications related to CKD.

METHODOLOGY

Study design

It is a prospective observational study.

Study site and period

The present study was conducted at Dialysis department in ST Joseph's Hospital Nellore, The present study was carried out for a period of six months from December-2016 to May-2017. This study protocol was approved by institutional ethical committee (IEC).

Sample size

During the study period of eight months of this study, the total sample size was 100.

STUDY CRITERIA

Inclusion criteria:

- The study includes the following subjects:
- Patients with chronic kidney disease stages 4 and 5.
- Patients of both genders.
- Patients with age >35 years.

Exclusion criteria:

- The study excludes the following subjects:
- Renal replacement therapy patients.
- Immunosuppressant patients.
- Pregnancy and lactating women.

RESULTS

Percentage Distribution of CKD Patients Bas Ed on Gender

A total of 60 patients were enrolled in the study, the percentage distribution of the study population showed that 18 (30%) females and 42 (70%) males which are represented in table 02.

Table 02:

S.No	Gender	No. Of Patients	Total Percentage
1	MALE	42	70
2	FEMALE	18	30

Percentage Distribution of CKD Patients Based On Age Group

Total distribution of patients with respect to age shows that majority of patients were found in between the age group 51-60 years 18 (30), followed by 15 (25) in between the age group 61-70 , 14(23.33) in between the age group 41-50 years as represented in the table 03.

TABLE 03 Percentage distributions of CKD patients based on age group.

Age Group (yrs)	N.o of Female patients and percentage (%)	N.o of male patients and percentage (%)	Total N.o of patients (%)
31-40	6 (27.27)	7 (18.42)	13 (21.66)
41-50	5 (22.72)	9 (23.68)	14 (23.33)
51-60	6 (27.27)	12 (31.57)	18 (30)
61-70	5 (22.72)	10 (26.31)	15 (25)
total	22(36)	38(64)	60(100)

Distribution of Risk Factors of CKD in Males

Out of 38 males patient was found to be predominant risk factor and the male population affected with hypertension was 37 patients (88.09%) followed by diabetes mellitus (50%) , smoking (26.19%) , alcohol (38.09%) , obesity (11.90%) , hypotension (7.14%), stroke (7.14%) are the other risk factors which causes ckd are represented in table 04 and figure 5.4 and 5.5

TABLE 04: Distribution of risk factors of ckd in males.

S.No	Risk Factor	Population	Percentage
1	Hypertension	37	88.09 %
2	Diabetes mellitus	21	50 %
3	Smoking	11	26.19 %
4	Alcohol	16	38.09 %
5	Obesity	5	11.90 %
6	Hypotension	3	7.14 %
7	Stroke	3	7.14 %

Comparison of Single Vs Combination

In the total no of 60 ckd patients based on single therapy vs combination therapy the single therapy patients are 20 and as combination therapy 40 patients as shown in the below table 05.

Table 05: Number of patients in single and combination

S. No.	Category	No. of Patients
1	Single therapy	20
2	Combination therapy	40

Comparison of modified vs non-modified

In the total no of 60 CKD patients based on modified vs non modified therapy the modified therapy patients are 22 and as non modified therapy are 38 patients are shown as table 06.

Table 06: Number of patients in modified and non modified.

S. No.	Category	No. of Patients
1	Modified	22
2	Non-modified	38

Distribution of Risk Factors of CKD in Total Population

Out of 60 patients with chronic kidney disease 49 people are affected with hypertension) Other risk factors such as diabetes mellitus (46.66%), smoking (18.33%), alcohol (26.66%) obesity (8.33%), hypotension (5%), stroke (56%), DIN (3.33%), UTI (6.66%) are represented in table 07.

Table 07: Distribution of risk factors of CKD in total population.

S.no	Risk factor	population	Percentage
1	Hypertension	49	81.66 %
2	Diabetes mellitus	28	46.66 %

3	Smoking	11	18.33 %
4	Alcohol	16	26.66 %
5	Obesity	5	8.33 %
6	Hypotension	3	5 %
7	Stroke	3	5 %
8	DIN	2	3.33 %
9	UTI	4	6.66 %

Comparing the Risk Factors for CKD with Total Population

By comparing the risk factors of CKD patients to that of normal population it was found to be that $P < 0.05$ (*): Statistically significant. There is a less than 5% chance the result happened by accident $P < 0.01$ ():** highly significant < 0.001 ():* Very highly significant. This is used for your top factors like Hypertension and Diabetes

Table 08: Comparing the Risk Factors for CKD with Total Population.

S.No	Risk Factor	N Value	P Value
1	Hypertension	49	<0.0001
2	Diabetes mellitus	28	<0.0001
3	Smoking	11	0.7
4	Alcohol	16	0.0005
5	Obesity	5	0.04
6	Hypotension	3	0.3
7	Stroke	3	0.1
8	DIN	2	0.3
9	UTI	4	0.2

DISCUSSION

The purpose of this study is to identify the major risk factors that lead to the onset of CKD. This chapter consists of two parts: part (1) Deals with the analysis of various demographic and background information variables part. (2) Deals with the analysis of the patients' medical history.

Part 1 Analysis of demographic and background information variables

The study sample (n=60patients) consisted of 70%males, and30% females. Total distribution of patients with respect to age group shows that majority of patients were found in between the age group 51-60 years 18 (30) , followed by 15 (25) in between the age group 61-70 , 14(23.33) in between the age group 41-50 years, 13(21.66) in between the age group 31-40 years

Part 2 Analysis of the patient's medical history

Out of 60 patients 42 patients are of males and 18 patients are of females affected with chronic kidney disease who are considered into the study. Out of 42 male patients hypertension was found to be predominant risk factor and the male population affected with hypertension was 37 patients (88.09%) followed by diabetes mellitus (50%) , smoking (26.19%), alcohol (38.09%) , obesity (11.90%) , hypotension (7.14%) , stroke (7.14%) are the other risk factors which influence CKD.

Out of 18 female patients hypertension was found to be predominant risk factor and the patients affected with hypertension was 12 patients (66.66%) followed by diabetes mellitus (38.88%) , obesity (27.77%) , DIN (11.11%) , UTI (22.22%) are the other risk factors which influence CKD.

Out of 60patients with Chronic kidney disease 49 people are affected with Hypertension. Other risk factor such as diabetes mellitus (46.66%), smoking (18.33%) , alcohol (26.66%) , obesity (8.33%) , hypotension (5%) , stroke (56%) , DIN (3.33%) , UTI (6.66%) This study had shown that hypertension is significantly leading cause of CKD (P 0.0001). Several studies were conducted in the world show that elevations of blood pressure are a strong dependent risk factor for CKD.

Hypertension is well known to be a risk factor for CKD worldwide and CKD is accentuated as one of the dependent risk factors for CKD. Which in turn can be a risk for hypertension? In the present study, 81% of hypertensive patients were affected with CKD and the correlation between hypertension and CKD was found to be statistically significant (P=0.0001), the underlining mechanism may be in hypertension, glomerular infiltration rate (GFR) has been reported to

decline faster compared to those without hypertension. Furthermore, some studies have found a close relation between the rate of decline of GFR and the development of new onset CKD after a while in patients with hypertension. In CKD Long-term, uncontrolled, high BP leads to high intra glomerular pressure, it lead to impairing glomerular filtration. Damage to the glomeruli results in increased protein filtration, this leads to CKD".

CONCLUSION

This study was an effort to highlight the main risk factors that lead to CKD. Identifying major risk factors on the onset of CKD is an important part in preventing complications of developing CKD. Major risk factors that lead to CKD were chronic disease such as diabetes mellitus, hypertension, alcohol, smoking, obesity CVD, urinary tract infection, drug induced nephrotoxicity. This study found that main risk factors that lead to CKD were hypertension, diabetes mellitus, obesity and alcohol consumption. While other risk factors that lead to CKD are associated with some wrong habits such as taking medication without prescription. Such drugs include non steroidal anti inflammatory drugs.

Major complications which were identified during dialysis are SOB, weakness, anaemia, DMCD, bad mouth odour, itchy skin, night urination and dizziness.

There is an increase prevalence rate of risk factors of CKD, which requires health authorities to implement preventive strategies. Smoking and alcohol emerges as a chief modifiable renal risk factor particularly among diabetes, hypertension and patients with CVD. Based on the observations found in the study ,it may suggest that implementation of community based awareness programs can reduce the overall burden of risk factors which in turn will reduce the incidence of CKD.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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AUTHOR CONTRIBUTIONS

All are contributed equally.

ETHICAL STATEMENT

Not Applicable

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