

A PILOT STUDY BASED ON MAJOR RISK FACTORS ASSOCIATED WITH CHRONIC KIDNEY DISEASE PATIENTS IN A TERTIARY CARE CENTRE

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ABSTRACT

Chronic kidney disease (CKD) is a major cause of cardiovascular morbidity and mortality and is considered as a significant public health problem that places a burden on global healthcare resources. The observation is that small reductions in the decline in renal function early in the disease process can provide marked benefits later, in terms of delaying progression to renal replacement therapy, suggests that substantial benefits can be gained from the early identification and treatment of individuals at risk. In order to develop effective strategies to identify such individuals and delay or prevent disease progression, a comprehensive understanding of the complex interplay between risk factors influencing the disease process is required to be observed. This study was undertaken to assess the major risk factors associated with CKD¹.

KEY WORDS

Chronic kidney disease, Risk factors, Renal function, Hypertension, Diabetes mellitus

INTRODUCTION

Kidney disease is a common and progressive illness that is becoming a global public health problem. The inability of the kidney to perform these functions adequately is termed as renal failure. Dysregulation of kidney function is classified as Acute Kidney Disease (AKD) and Chronic Kidney Disease (CKD). The type of renal failure is determined by the trend in the variation of serum creatinine values. ARF recently known as Acute Kidney Injury is the sudden reversible interruption of the kidney function characterized by oliguria (decreased urine production, quantified as less than 400 ml per day in adults), body water and body fluids disturbances and electrolyte management².

CKD or Chronic Kidney Injury is a progressive irreversible deterioration of renal function that may occur even when the primary insult has been corrected or treated or become inactive. Chronic kidney disease is

defined as the kidney damage or glomerular filtration rate (GFR) $.60 \text{ ml/min/1.73 m}^2$ for three months or more, irrespective of the cause. The lack of community based screening programs has led to patients being detected with CKD at an advanced stage. The prevalence of CKD is estimated at nearly 25 million people.³ Long term follow up studies indicate that patients continue to recover renal function up to six months after hospital discharge, had a chance of development of some degree of CKD and need for renal replacement therapy(RRT). Even though the majority of patients will recover normal kidney function, approximately 25% will have CKD, and 12.5% will remain dialysis dependent. Chronic renal failure often progresses through four stages. Reduced renal reserve shows a glomerular filtration rate (GFR) of 35% to 50% of normal; renal insufficiency has a GFR of 20% to 35% of normal; renal failure has a GFR of 20% to 25% of normal; and end-stage renal disease has a GFR less than 20% of normal.

The risk factors associated with CKD are diabetes mellitus, hypertension, dyslipidemia, autoimmune diseases, polycystic kidney disease, cardio vascular diseases, systemic infections, urinary tract infections, urinary stones, lower urinary tract obstructions, and drug toxicity. The development of CKD is a complex phenomenon the Kidney Disease Outcomes Quality Initiative (K/DOQI) has recommended categorizing risk factors associated with CKD as susceptibility, initiation, and progression factors. Initiation factors are medical conditions that directly cause kidney damage and progression of CKD exacerbate this kidney damage and are related to an accelerated decline in kidney function². The majority of susceptibility factors are not modifiable, but may identify people who are at high risk for developing CKD. In contrast, pharmacotherapy and lifestyle interventions have been shown to modify CKD-related initiation and progression factor. Understanding the risk factors and implementing screening of at risk populations will increase early detection, initiate treatment of modifiable risk factors for ESRD, along with appropriate treatment for CKD.

MATERIALS AND METHODS

The present study was conducted after the clearance from the institutional Human Ethical committee.

It was carried out in the Nephrology Department of a tertiary care centre.

Inclusion criteria:

- Patient of both sexes in the age group of ≥ 18 years with CKD.
- Dialysis patients are included in this study.

Exclusion criteria

- Patients who are not willing to participate in the study.
- Patients with associated haematological disorder.
- Pregnant women.

PROCEDURE

Only 40 patients diagnosed with CKD were enrolled for the study. A written informed consent was taken from the patients as per by ICMR biomedical research guideline format. A written informed consent will be taken from the patients with CKD satisfying the inclusion and exclusion criteria. The relevant data will be collected from patients' medical records and direct interview with patients with the help of physicians. The collected data will be entered in pre framed proforma based on valid suggestions from experts of medical and pharmacy fields. For this study patient's various risk factors for CKD were assessed from the study population based on the collected data. At the end of the study all the collected parameters and scores were compared from the baseline to the end of the study.

RESULT AND DISCUSSION

Fourty patients having CKD diagnosed by physician were enrolled in the study, The study was done in the Nephrology Department of the tertiary care hospital in South Kerala. Patients between the age ≥ 18 years were enrolled in the study.

The effectiveness of the treatment was statistically assessed using Chi square test. A calculated p value less than 0.05 is considered to be statistically significant.

The details of various risk factors assessed were given below:

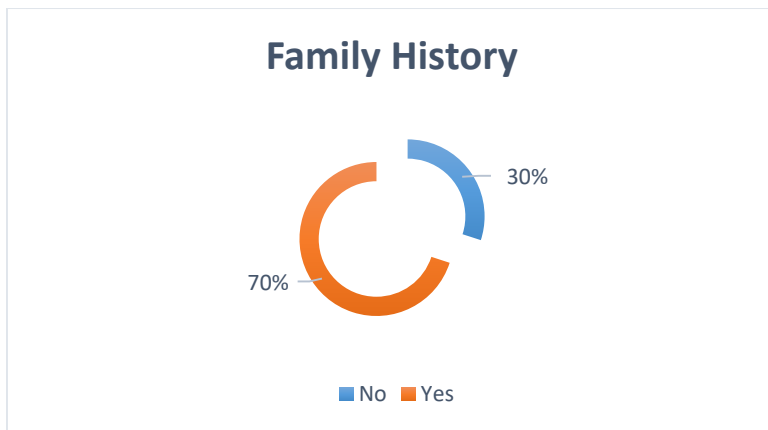
- **Distribution of patients based on family history is shown in table 1**

Family History	Frequency	Percentage
Yes	28	70%
No	12	30%

Table 1 based on the distribution of patients based on family history

From table 1 it is seen that 70% patients have a family history of CKD and 30% patients do not have family history of CKD. Therefore majority of the patients enrolled in the study have a family history of CKD.

- **Diagrammatic representation of patients based on family history are shown in fig 1**



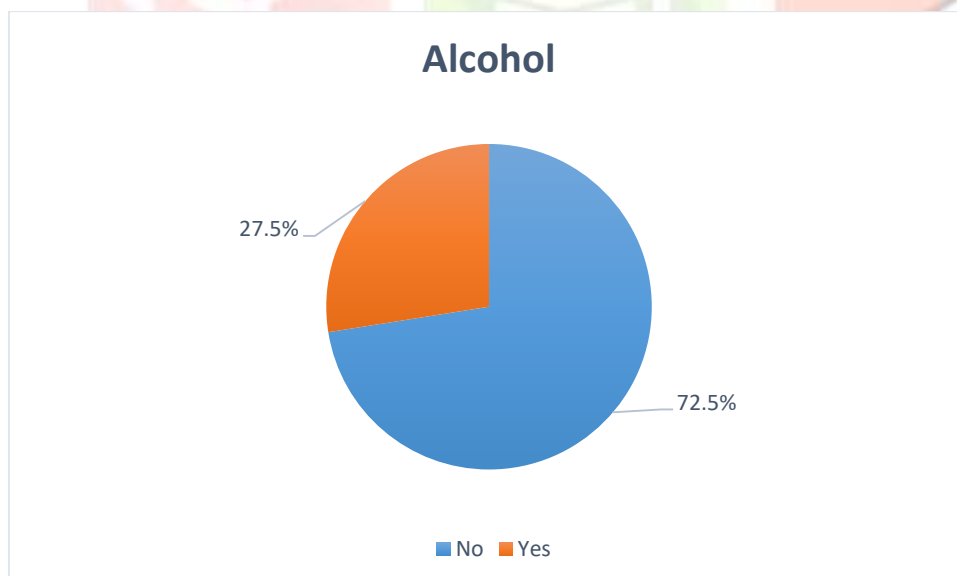
- **Distribution of patients based on alcohol is shown in table 2**

Alcohol	Frequency	Percentage
Yes	11	27.5
No	29	72.5

Table 2 based on the distribution of patients based on alcohol

From table 2 it is seen that 72.5% patients were not alcoholic and 27.5% patients were alcoholic. Therefore majority of the patients enrolled in the study were not alcoholic.

- **Diagrammatic representation of patients based on alcohol are shown in fig 2**



- **Distribution of patients based on smoking is shown in table 3**

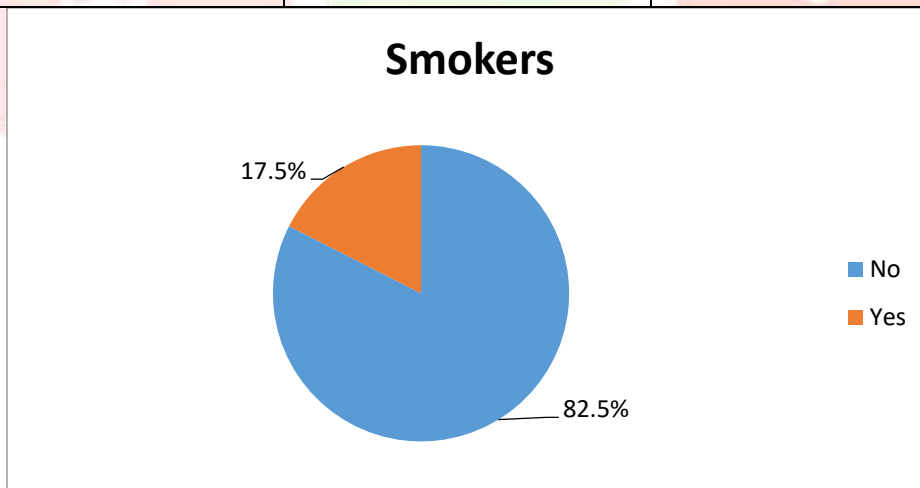
Smoking	Frequency	Percentage
Yes	7	17.5
No	33	82.5

Table 3 based on the distribution of patients based on smokers

From table 3 it is seen that 82.5% patients were not smokers and 17.5% patients were smokers. Therefore majority of the patients enrolled in the study were not smokers.

- Diagrammatic representation of patients based on smokers are shown in fig 3

Hypertension	Frequency	Percentage
Yes	31	77.5
No	9	22.5

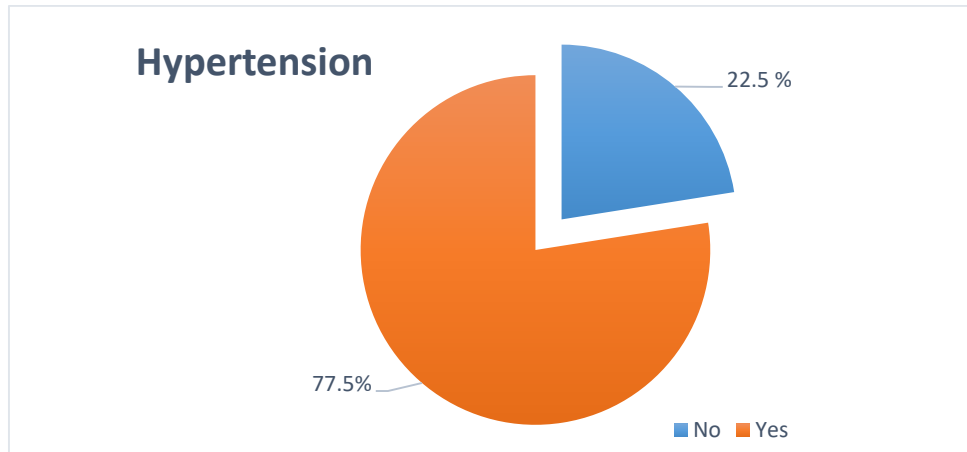


- Distribution of patients based on hypertension is shown in table 4

Table 4 based on the distribution of patients based on hypertension

From table 4 it is seen that 77.5% patients with hypertension and 22.5% patients without hypertension. Therefore majority of the patients enrolled in the study had hypertension.

- Diagrammatic representation of patients based on hypertension are shown in fig 4



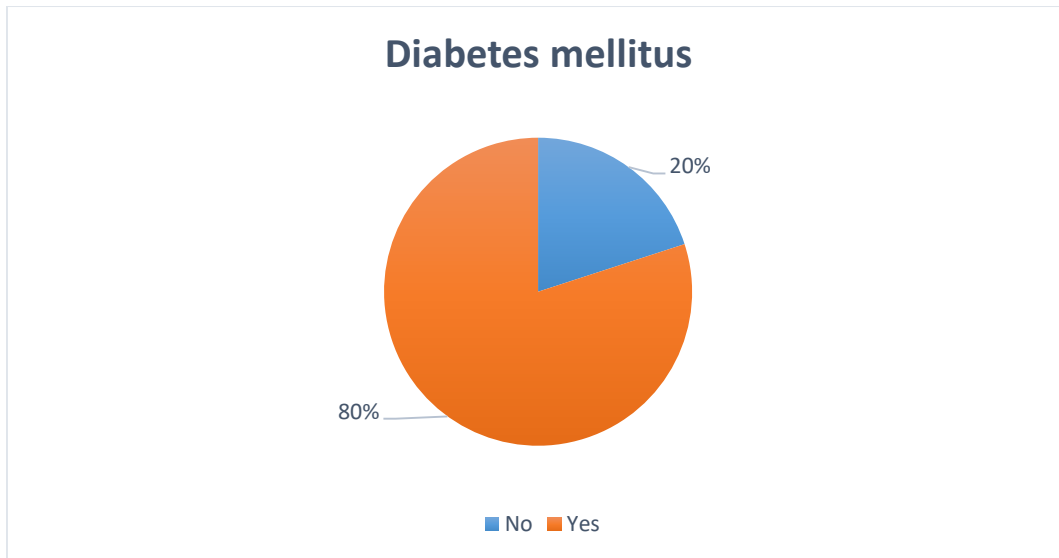
- Distribution of patients based on diabetes mellitus is shown in table 5

Diabetes mellitus	Frequency	Percentage
Yes	32	80
No	8	20

Table 5 based on the distribution of patients based on diabetic mellitus

From table 5 it is seen that 80 % patients with diabetes mellitus and 22.5% patients without diabetes mellitus. Therefore majority of the patients enrolled in the study had diabetic mellitus.

- Diagrammatic representation of patients based on diabetes mellitus are shown in fig 5.



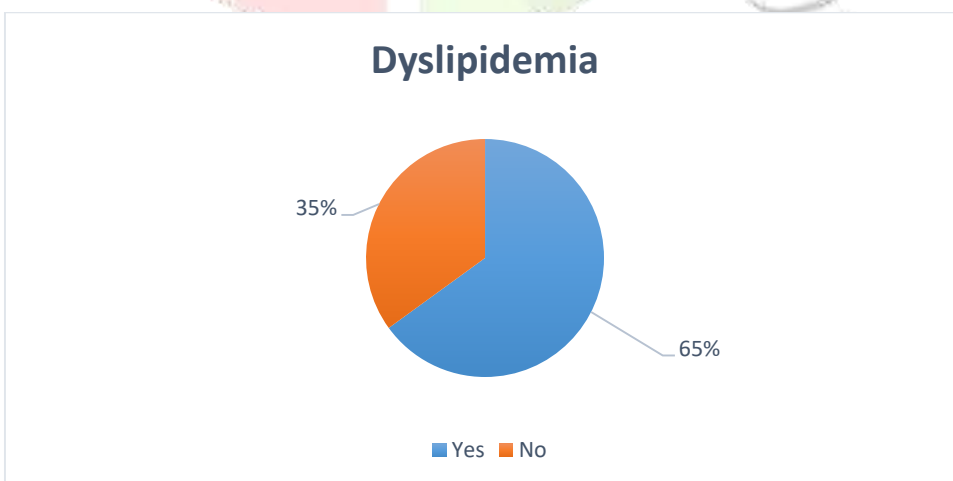
- **Distribution of patients based on dyslipidaemia is shown in table 6**

Dyslipidaemia	Frequency	Percentage
Yes	26	65
No	14	35

Table 6 based on the distribution of patients based on dyslipidaemia

From table 6 it is seen that 65% patients with dyslipidaemia and 35% patients without dyslipidaemia. Therefore majority of the patients enrolled in the study had dyslipidaemia.

Diagrammatic representation of patients based on Dyslipidaemia are shown in fig 6



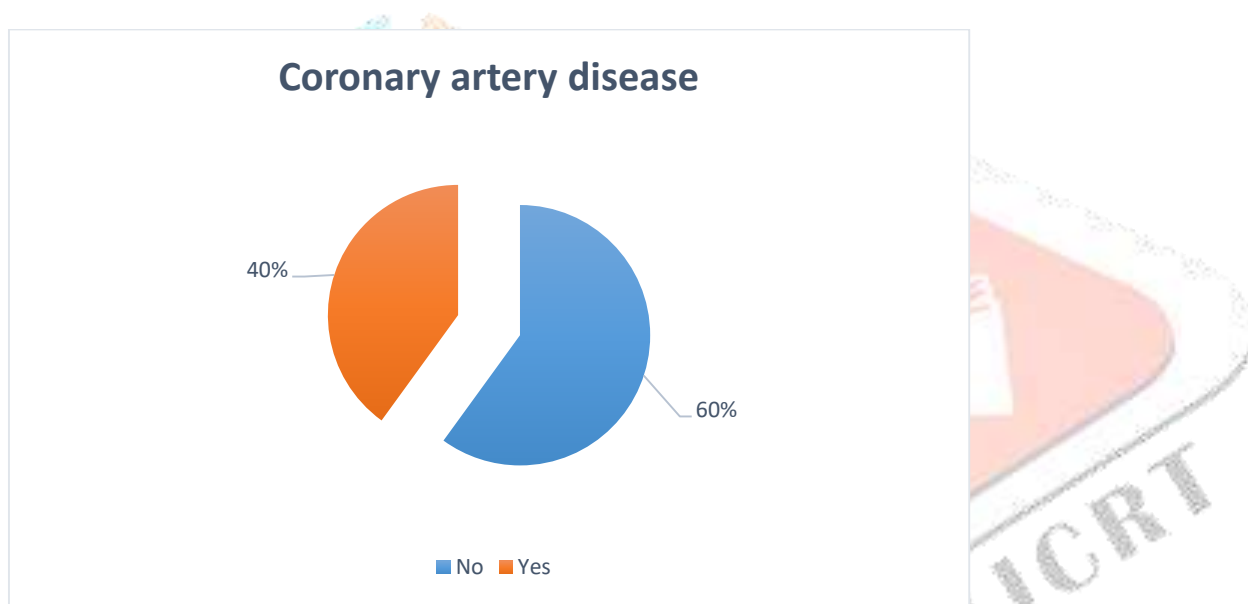
- **Distribution of patients based on coronary artery disease is shown in table 7**

Coronary artery disease	Frequency	Percentage
Yes	16	40
No	24	60

Table 7 based on the distribution of patients based on coronary artery disease

From table 7 it is seen that 40% patients with coronary artery disease and 60% patients without coronary artery disease. Therefore majority of the patients enrolled in the study were without coronary artery disease

Diagrammatic representation of patients based on coronary artery disease are shown in fig 7



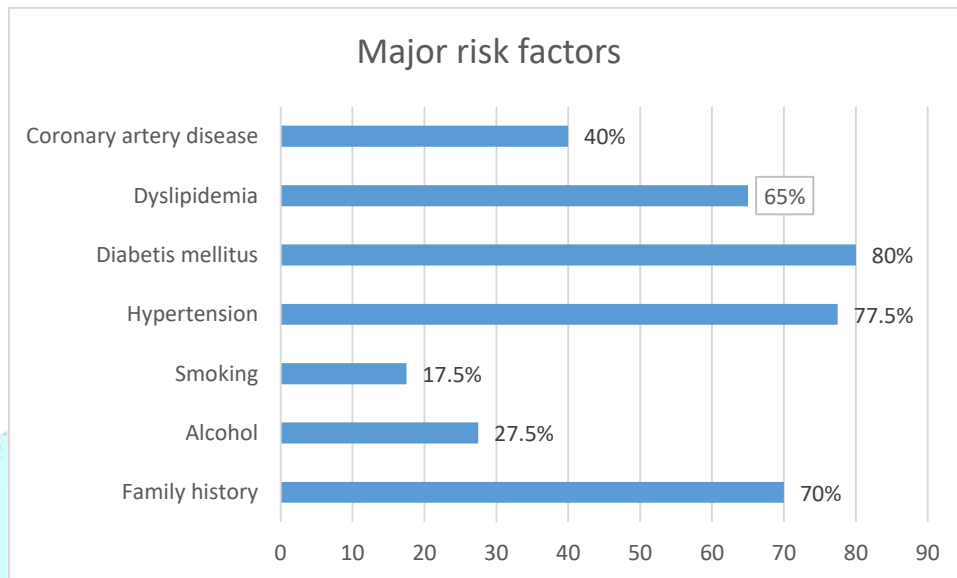
- **Major risk factors associated with CKD based on above mentioned details are shown in table 8**

Risk factors	Frequency	Percentage
Family history	28	70
Alcohol	11	27.5
Smoking	7	17.5
Hypertension	31	77.5
Diabetes mellitus	32	80
Dyslipidaemia	26	65
Coronary artery disease	16	40

Table 8 based on major risk factors associated with CKD

From table 8, 80% patients had diabetic mellitus, 77.5% patients had hypertension, 70% of patients have family history on CKD, 65% of patients had dyslipidaemia, 40% of patients had coronary artery disease, 27.5% patients were alcoholic and 17.5% of patients were smokers. From this study observed that common risk factors associated with CKD were diabetic mellitus, hypertension, family history of the patients and dyslipidaemia.

- **Diagrammatic representation on major risk factors associated with CKD are shown in fig 8**



The data on various risk factors were collected from the medical records of 40 CKD patients which was analysed using appropriate statistical methods. Frequency and percentage were calculated as summary measures for categorical study variables. Chi-square test was employed for finding significant risk factors for CKD. A calculated P-value less than 0.05 is considered to be statistically significant. All the analysis were carried out with the help of software SPSS v.21 for windows. Rumezsa Kazancioğlu, in their study revealed that by understanding the risk factors and implementing screening of at risk populations will increase early detection, initiate treatment of modifiable risk factors for ESRD, along with appropriate treatment for CKD⁴.

CONCLUSION

This study depicts the major risk factors associated with CKD patients. It was observed that common risk factors were diabetes mellitus, hypertension, family history of patients and dyslipidemia. CKD is a complex, progressive condition that develops slowly in some individuals, but rapidly in others. In addition to the underlying cause of renal failure, the rate of disease progression may be observed by the presence of CKD risk factors. The risk factors may increase of progression of CKD to the end stage. Therefore by proper assessment of the various risk factors will provide early detection, initiate treatment of modifiable risk factors for ESRD, along with appropriate treatment for CKD.

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