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Original Article

A Prospective Observational Study on Assessment of Etiology, Complications, and Stages of Renal Diseases in the Khammam District of Telangana

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ABSTRACT

Background: Renal pathologies, encompassing Chronic Kidney Disease (CKD) and Acute Kidney Injury (AKI), represent considerable public health challenges, contributing to heightened morbidity and mortality rates on a global scale. In India, the increasing trends of urbanization, environmental determinants, and alterations in lifestyle have exacerbated the incidence of renal ailments. This research endeavor seeks to evaluate the underlying causes, associated complications, and progressive stages of renal diseases in the eastern districts of Telangana, where epidemiological data are notably scarce. **Materials and Methods:** statistical analyses to assess disease patterns, complications, and treatment outcomes. Comorbidities, biochemical parameters, and treatment modalities were recorded. We performed 327 patients were enrolled, who were diagnosed on renal diseases. Demographics, medical history, centers of eastern Telangana. Based on the specified inclusion and exclusion criteria, a total of A prospective observational study was carried out in tertiary care. **Results:** Renal disease prevalence reached its peak among people who fell within the age bracket of 55-64 years (25.99%) and these patients mostly identified as male (65.44%). The patient population concentrated heavily in rural settings where healthcare access problems could exist because 63.3% of patients came from those areas. The study revealed hypertension affected 70.33% of patients while diabetes mellitus developed in 29.66% of the participants. Patient evaluation demonstrated that stage 5 CKD affected 62.15% of cases while stage 4 affected 20.92% and stage 3 affected 14.15% of cases. Patients experienced three main complications: anemia affected 70.33% of patients followed by volume overload affecting 63.3% and sepsis developing in 12% of patients. Workplace interventions resulted in enhanced renal functionality because patients experienced serum creatinine level reduction from 5.56 to 3.21 mg/dL while their Glomerular Filtration Rate (GFR) increased from 17.08 to 48.4 mL/min. **Conclusion:** This study highlights the substantial burden of renal diseases in the region, with hypertension and diabetes being the primary risk factors. The higher prevalence among rural populations emphasizes the need for improved healthcare access and early screening programs. Targeted interventions, enhanced patient education, and optimized management strategies are crucial to slowing disease progression and improving patient outcomes.

Keywords: Chronic kidney disease, Acute kidney injury, Telangana, Renal complications, Dialysis, Hypertension, Diabetes.

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INTRODUCTION

Kidney diseases have emerged as a major worldwide public health problem that substantially elevates the rates of both mortality and sickness. The two conditions Chronic Kidney Disease (CKD) and Acute Kidney Injury (AKI) occur frequently because they heighten the risk for serious health problems including cardiovascular problems metabolic issues and End-Stage Renal Disease (ESRD) (Ruggenenti, Cravedi, and Remuzzi, 2012). Developing prevention and management plan success requires complete knowledge of CKD and AKI epidemiology and risk elements together with their mechanism foundations. Successful outcomes for kidney disease patients depend on using multiple health care approaches which include medical innovations and lifestyle changes together with patient education programs (Lunyera *et al.*, 2016).

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Epidemiology of Renal Diseases

Multiple factors including altered lifestyles and environmental risks together with genetic risks and increased numbers of patients with diabetes or hypertension have turned kidney diseases into a significant national public health matter in India. Rapidly developing cities and shifts in eating patterns combined to boost kidney disease prevalence making research-based interventions and targeted medical actions essential for addressing this situation (Freedman, Divers, and Palmer, 2013). Public health and preventive measures become essential as this epidemic continues to worsen because it causes extensive strain on healthcare systems. The effective resolution of this situation needs a complete strategy encompassing both educational programs and early screening tests and policies that minimize health risk factors and create better results.

Regional Context of Telangana

Researchers have not thoroughly examined renal disease occurrences together with its risk elements throughout Telangana's eastern sections. The elevated kidney disorder rates in this region might be driven by environmental exposures at work and home settings besides dietary patterns shaped through socioeconomic factors. Renal health investigations need extensive epidemiological investigation to reveal exact causes and show environmental element relationships with kidney well-being. Research into these factors should enable healthcare providers to create prevention strategies and specific healthcare programs which will result in better outcomes for communities under treatment. The successful resolution of this scientific knowledge deficit will lead to better renal disease equality outcomes while strengthening public healthcare in Telangana (Unnisa *et al.*, 2024).

Study Rationale

A thorough understanding of the disease etiology, associated symptoms, and accessible medical therapies is necessary for the effective improvement of patient outcomes and the development of targeted interventions. In the eastern regions of Telangana, a prospective observational study examines the causes of kidney diseases, its consequences, and its management strategies.

Acute Kidney Disease (AKI)

The term Acute Renal Failure (ARF), formerly known as Acute Kidney Injury (AKI), refers to a rapid and sometimes reversible loss in kidney function as measured by GFR. But immediately following a renal insult, Blood Urea Nitrogen (BUN) or Creatinine (Cr) values can be within the normal range, and the only sign of AKI might be a decrease in urine output. AKI may result in the accumulation of water, salt, and other metabolic products. Additional issues with electrolytes may also be brought on by AKI (Ronco, Bellomo, and Kellum, 2019).

AKI can manifest in three distinct forms: pre-renal, intrinsic acute kidney disease, and post-renal AKI. Only "intrinsic" AKI is a sign of true kidney disease; pre-renal and post-renal AKI are caused by extra-renal diseases that decrease Glomerular Filtration Rate (GFR). Hence intrinsic renal disease will eventually result from the pre or post renal circumstances if they continue (Teo and Endre, 2017).

Chronic Kidney Disease (CKD)

Chronic Kidney Disease (CKD) is defined as kidney damage or an estimated Glomerular Filtration Rate (eGFR) of less than 60 mL/min/1.73 mt^2, irrespective of the etiology, that lasts for three months or more. The progressive decrease of kidney function eventually necessitates kidney replacement therapy, such as dialysis or transplantation (Vaidya and Aeddula, 2024).

Based on glomerular filtration rate, the 2012 KDIGO CKD classification splits CKD into 6 distinct categories (G1 to G5). Urine samples taken early in the morning, known as "spot" urine samples, are used to calculate albumin-creatinine ratio (mg/mmol), the staging process depends on three levels of albuminuria (Ji *et al.*, 2016).

Etiology of Renal Diseases

The origin of kidney diseases exists at multiple levels since both Acute Kidney Injury (AKI) and Chronic Kidney Disease (CKD) form due to different causes. The three classifications of AKI include prerenal along with intrinsic renal and postrenal factors in the pathogenesis of this condition. The factors leading to pre-renal failure include hypervolemia in addition to reduced cardiac output or systemic vasodilation and renal vasoconstriction and efferent arteriole dilation within the glomerulus. Acute Tubular Necrosis (ATN), Acute Interstitial Nephritis (AIN) and glomerulonephritis together with intratubular obstruction compose the list of intrinsic renal disease causes. The condition of postrenal disease occurs from obstructions that stem from renal or ureteral calculi and tumors coupled with blood clots and neurogenic bladder whereas urethral obstruction frequently arises because of prostate enlargement in older males. Patients typically develop CKD because of diabetes and hypertension although kidney failure may stem from PKD, infections, certain drugs, autoimmune diseases including Goodpasture's disease, heavy metal toxicity, the rare genetics of Alport syndrome together with hemolytic uremic syndrome, IgA vasculitis and renal artery stenosis. Successful prevention together with management strategies require identification of fundamental underlying factors (Sohgaura and Bigoniya, 2017).

Risk factors

People with kidney disease risks must consider personal history as well as age over 60 and obesity and heart issues and prior kidney problems. The combination of life-style choices including smoking acts as an additional risk factor because genetic background and

ethnic background affect disease vulnerability. The long-term treatment with specified medications among patients shows that it contributes to kidney dysfunction thus requiring ongoing screening along with prompt medical intervention to stop condition escalation (Whelton and Klag, 1989).

Objectives of the Study

By analyzing clinical data and patient history, this study seeks to:

- Provide insights into disease progression.
- Assess treatment efficacy.

MATERIALS AND METHODS

Study design

This prospective observational study is being carried out by the research team in medical facilities of the eastern regions of Telangana. The study calls for ongoing patient enrollment for a predetermined period of time, followed by disease progression monitoring and therapy effect evaluation.

Study population

Clinical participants with different nephropathies (disease include AKI, CKD, and others) will be recruited at public and private health institutions. The study recruitment involves patients whose age falls between 0 to 80 years and who agree to participate through informed consent. Incomplete medical records as well as patient unwillingness to join the study will result in exclusion from this research.

Data collection

A data collection method will use both structured Case Report Forms (CRFs) and Electronic Medical Records (EMRs) to record information about patient demographics alongside medical history and lifestyle factors and comorbidities as well as biochemical parameters, imaging findings, and treatment plans.

Table 1: Demographic details of study participants.

Parameter	Frequency	Percentage (%)
Age in years		
<15	2	0.61
15-24	12	3.66
25-34	26	7.95
35-44	35	10.7
45-54	68	20.79
55-64	85	25.99
65-74	63	19.26
>75	36	11
Total	327	100
Sex		
Male	214	65.44
Female	113	34.55
Residency		
Rural	207	63.3%
Urban	120	36.69%
Body Mass Index		
Under weight (<18)	68	20.7%
Normal weight (18-25)	200	61.1%
Over weight (25-30)	42	12.8%
Obese (30-35)	16	4.8%
Extreme obese (35-40)	1	0.30%
Employment		
Employed	95	29.05
Unemployed	232	70.94
Smoking		
Yes	113	34.5
Alcoholics		
Yes	190	58.1%
CKD Stages		
Stage 1	0	0
Stage 2	9	2.75
Stage 3	46	14.06
Stage 4	69	21.10
Stage 5	203	62.07
Co-Morbidities		
HTN	230	70.33%
Diabetes	136	29.66%
Thyroid	26	7.95
Assessment of Dialysis Cycles		
1 cycle	11	3.36
2 cycles	43	13.14
3 cycles	63	19.26
4 cycles	47	14.37
5 cycles	11	3.36
6 cycles	6	1.83
8 cycles	1	0.30

Assessment Parameters

Etiology: The research analyzes the usual contributors to kidney failure that combine diabetes, hypertension, glomerulonephritis, inherited factors, infections and environmental elements.

Complications: The research will record detailed instances of cardiovascular conditions as well as electrolyte imbalance and metabolic disorders and dialysis requirement.

Treatment Modalities: The research will evaluate the effectiveness of treatment as well as dialysis, renal transplantation, and supportive therapy protocols.

Statistical analysis: Data has been analyzed using appropriate statistical tests.

Ethical consideration

The research will be conducted with consent from the institution's ethical committee. Standards for patient data confidentiality will be upheld, and consent will be obtained before any study participants are included.

RESULTS

A total of 327 research participants had their demographic and clinical characteristics provided within the presented table. Based on participants' data most patients fall into the age range of 55 to 64 (25.99%, 45-54 years account for 20.79% and 19.26% belong to 65-74 years). Research participants consist of 65.44% males to 34.55% females with rural populations composing 63.3% of the study group. 57.1% of patients have healthy body mass indexed between 18 and 25, yet 20.7% are under the normal weight range and 17.9% are above normal weight. The data shows that unemployment affects 70.94% of participants but employment status exists for 29.05% of them. The research reveals that 34.5% of participants smoke but 58.1% drink alcohol. The patient population experiences mostly Stage 5 Chronic Kidney Disease (CKD) (62.07%) when compared to Stage 4 (21.1%) and Stage 3 (14.06%) conditions but does not present any Stage 1 cases. Rural populations experiencing chronic kidney disease present with hypertension and diabetes as both prevalent comorbidities (70.33% and 29.66% respectively) and thyroid disorder is observed in 7.95% of patients. The majority of patients complete three or four dialysis cycles (33.63%) according to Dialysis cycle assessment results however 1.83% experience six cycles and the lowest number of patients (0.30%) require eight cycles. The study indicates CKD impacts people in rural locations to a greater extent because healthcare availability is restricted along with certain lifestyle patterns. Early prevention and management strategies become essential because patients exhibit high rates of hypertension and diabetes and these conditions correlate with CKD disease progression. The details were depicted in Table 1.

Assessment of renal parameters before and after treatment:

The mean values of the renal parameters (Sr.Creatinine, BUN, and GFR) before and after treatment. The patients' kidney dysfunction was severe at baseline because the measured values of serum creatinine (5.56) and BUN (308.74) together with GFR (17.08) supported a diagnosis of significant renal impairment and potential acute kidney injury or End-Stage Renal Disease (ESRD) are shown in below Table 2.

This study has assessed the complications of chronic kidney diseases which are inevitable. Most of the patients reported with severe anemia, mineral bone disorder, volume over load, sepsis, uremia all these are life threatening and hamper the patient quality of life and also increases the mortality. The list of complications identified in the study population are presented in Table 3.

Different treatments are needed to handle complications associated with CKD. Patients with severe anemia receive treatment from the agent Darbepoetin as an erythropoietin-stimulating medication and mild anemia treatment involves using Ferisome and Ferrous fumarate supplements. Patients receive calcium and Vitamin D for managing CKD-Mineral and Bone Disorder (CKD-MBD) while Torsemide and Furosemide along with Hydrochlorothiazide serve for volume overload control. An infection in the urinary tract known as urosepsis and sepsis receives treatment from doctors through administration of antibiotics including Piperacillin-Tazobactam and Cefoperazone-Sulbactam. The medical treatment of metabolic acidosis requires Sodium Bicarbonate and hyperkalemia needs phosphate binders together with calcium carbonate. Medical treatments purpose to reduce disease symptoms as well as improve patient results while slowing the progression of CKD. Continued research will lead to customized treatments along with specific drug innovation and enhanced dialysis procedures and fresh management methods for CKD-MBD. Through improved pharmacogenomics and better infection control practices and early intervention strategies the quality of patient care and survival rates will achieve further optimization. The details are presented in the Table 4.

Table 2: Assessment of Renal Parameters Before and After Treatment.

Renal parameters	Before	After	% Improved
GFR	17.08	48.4	35.28
Sr. Creatinine	5.56	3.21	57.73
BUN	308.74	60.81	19.69

Table 3: List of Complications observed in Study Population.

Complications	No. of Cases
Anemia/volume overload	42
Anemia	39
Volume overload	27
Severe anemia	20
Severe anemia/volume overload	20
Sepsis	12
CKD-MBD	6
Urosepsis	5
Uremia	5
Sepsis/shock	5
Urosepsis/shock	4
Anemia/uremia	4
Dehydration	3
Severe dehydration	5
Anemia/uremia/volume overload	6
Anemia/urosepsis	2
Anemia/sepsis	1
Anemia/urosepsis/volume overload	1
Sepsis/volume overload/urosepsis	1
Anemia/hperkalemia/urosepsis	1
Anemia/volume overload/hypokalemia	1
Anemia/urosepsis/shock	2
Anemia/hyponatremia	1
Anemia/metabolic acidosis	1
Anemia/volume overload/ thrombocytopenia	1
Severe dehydration/sepsis/metabolic acidosis	1
Severe anemia/dehydration	1
Dyselectrolytemia	2
Dyselectrolytemia drug induced	2
Severe anemia/dyselectrolytemia	1
Severe anemia/dyselectrolytemia/ urosepsis	1
Anemia/dyselectrolytemia/urosepsis	2
Hypokalemia	1
Hyponatremia	2
Severe anemia/urosepsis/recurrent hypoglycemia	1
Volume overload/sepsis/ hypoalbuminemia	1
Volume overload/hyponatremia	1
Pitting edema	1
Right leg cellulities/sepsis/uremia	1
Severe anemia/dyselectrolytemia/ urosepsis	2
Severe anemia/uremia	1
Severe anemia/urosepsis/shock/volume overload	1
Thrombocytopenia	2
Thrombocytopenia/sepsis/uremia	1
Uremia/volume overload	2
Urosepsis/metabolic acidosis/shock	1
Uremia/severe anemia	1
Uremia/volume overload/urosepsis/ hypokalemia	1

Table 4: Complications and their Treatment in Study Population.

Complications	Treatment given for complications
Severe anemia	Inj.Erythropoietin Stimulating Agent Inj.Darbepoetin
Anemia	Ferisome Ferrous fumarate
CKD-MBD	Calcium+Vitamin D
Volume overload	Diuretics 1.Loop diuretics – Torsemide, furosemide 2.Thiazides – Hydrochlorthiazide
Urosepsis/sepsis	Piperacillin Tazobactum Cefoperazone Sulbactam
Metabolic acidosis	Sodium bicarbonate
Hyperkalemia	Phosphate binders Calcium carbonate

DISCUSSION

The analyzed dataset demonstrates higher rates of disease occurrence for people between 55-64 years old who are affected at a rate of 25.99% when compared with the prevalence rates of 20.79% among those 45-54 years old and 19.26% among individuals aged 65-74 years old, These data show that middle-aged adults and senior citizens face greater health challenges. Young aged individuals and the greater than 75-year-old population exhibit meaningful risk factors at 11% but the 15-34 and younger than 15 age groups together contribute only 12.81% of all cases. The occurrence of renal diseases becomes more prevalent in older age groups because hypertension and diabetes combines with multiple long-term medical conditions throughout life. Similar to epidemiological data from other regions there seems to be less ESRD prevalence among younger groups although it might be attributable to both natural disease resistance and insufficient

diagnostic practices. The research shows the necessity of focused screening tests and preventive medicine approaches for patients aged between middle-age and elderly since it helps control progressive kidney diseases and produce enhanced treatment results.

Gender, Residence disparities in CKD

This study demonstrated that among 327 patients renal diseases affected males at 65.44% compared to 34.56% in females showing a higher male susceptibility toward nephropathies. The reasons behind this difference could be related to women having higher exposure to nephrotoxic substances and distinct lifestyle habits and possibly benefiting from hormonal protection. The fewer number of female cases may reflect inadequate medical exams. The data shows that 63.3% of renal disease cases originated in rural areas and this may be explained by factors including limited healthcare services, delayed medical attention and environment aspects that increase disease frequency. The identity of patients with end-stage renal disease in urban areas showed a higher tendency to have lifestyle-related risk factors than rural patients did. Research shows that healthcare strategies must develop specific measures because rural populations and females require better access to care and awareness programs and gender-tailored interventions to decrease renal disease cases.

Impact of socio cultural habits on renal health

This study involving 327 participants showed 58.1% were alcohol-dependent while 34.5% used tobacco products primarily affecting males because of sociocultural elements along with biological aspects and stress management strategies. The analysis demonstrated that tobacco and alcohol usage share a direct relationship because users of these substances have a tendency to use both products. The combination of these two addictive behaviors significantly increases the chances of getting cancer in addition to causing heart disease and liver damage which increases treatment complexity. Public health strategies need to unite awareness campaigns and behavioral therapy and cessation programs because they target both substance use disorders simultaneously. Through better comprehension of addiction connections within healthcare the effectiveness of screening measures and treatment practices as well as intervention programs increases leading to better patient outcomes.

Causality between obesity and CKD

The assessment of Body Mass Index (BMI) helps understand obesity effects on chronic kidney disease risk before performing GFR calculations through the Cockcroft-Gault method. Our research indicated that weight problems among participants included 12.8% who were overweight and 4.8% who were obese since obesity and being overweight create risks for CKD. The strong connection between BMI measurements and CKD risk development demonstrates why body mass index evaluation stands crucial during renal evaluation processes. The observed data demonstrates why specific weight management strategies must be developed for managing CKD risk levels and enhancing patient results.

Effect and Mechanisms involved in pathology of CKD by Co-morbidities

The prevalence of Hypertension (HTN), Diabetes Mellitus (DM), and thyroid disorders in patients, with HTN at 70.33%, DM at 29.66%, and thyroid disorders at 7.95%. Hypertension represents a key reason for the development of Chronic Kidney Disease because prolonged uncontrolled hypertension causes harm to renal blood vessels to create filtration barriers. Our study found that diabetes affected 29.66% of participants since uncontrolled blood sugar causes both nephropathy and kidney dysfunction. While thyroid-related conditions affect kidney health infrequently they do so by decrease glomerular filtration rate in hypothyroidism patients and modify both kidney stones development and blood pressure control mechanisms in hyperthyroidism. Patients need to effectively control their blood pressure levels and blood sugar levels and thyroid function to stop CKD from advancing. Monitoring combined with specific treatments allows medical professionals to safeguard the kidneys of patients who have these additional medical conditions.

The study group presented multiple coexisting diseases with pneumonia as the most common (28.57%) and old Cerebrovascular Accident (CVA) (15.71%), Chronic Obstructive Pulmonary Disease (COPD) (8.57%) and pulmonary Tuberculosis (TB) (5.71%) following. Seizures and old TB and minimal occurrences such as alcohol liver disease and hypertension-induced seizures and cirrhosis constituted the remaining conditions. Furthermore, the patient had three additional diseases including Coronary Artery Disease (CAD), asthma and rhabdomyolysis.

Chronic Kidney Disease (CKD) is a progressive condition where kidney function declines over time, leading to failure without proper intervention. The disease is divided into various stages, with patients in different stages. Stage 2 is mild, requiring early detection and management of risk factors. Stage 3 is moderate, requiring medication and lifestyle changes. Stage 4 is advanced, requiring dialysis and intensive management. Stage 5 is severe, requiring dialysis or transplantation. Early detection, management, and support are crucial for patients' quality of life. Timely intervention and monitoring can improve outcomes and delay advanced treatments.

Assessment of renal parameters before and after treatment

The renal parameters showed substantial improvement when patients received their intended treatment accompanied by dialysis procedures. Treatment resulted in a change of serum creatinine level from 5.56 to 3.21 which depict enhanced kidney

filtration together with a decrease in blood waste products. Dialysis increased kidney function efficiency as shown by decreased BUN levels from 308.74 to 60.81, which indicates a reduction in waste products containing nitrogenous substance. The GFR measurement demonstrated the most prominent change between tests with complete improvement from 17.08 to 48.8 despite still showing moderate kidney deficiency. The patient's medical situation stabilized and waste filtration improved together with uremic symptoms reduction through proper treatment and dialysis. Therapeutic progress requires close monitoring of renal function and electrolytes as well as fluid status for optimal treatment results and disease prevention. The substantial improvement in GFR confirms how prompt dialysis alongside proper treatments protects patients who experience serious renal failure.

Details of complications of CKD and its impact on treatment outcome

Multiple organs inside the body show signs of involvement during CKD which leads to widespread complications that include both anemia along with volume overload. The major medical problem known as anemia affects oxygen delivery therefore it worsens fatigue while producing weakness and decreasing kidney function as it makes disease management more difficult. Volume overload worsens cardiovascular stress which leads to hypertension and heart failure and pulmonary edema therefore proper fluid management becomes necessary. A detailed treatment strategy becomes essential because these complications create severe risks for patients and their health outcomes.

The widespread organ damage caused by CKD produces conditions like anemia together with volume overload. Poor oxygen supply connected to anemia conditions becomes a severe worry which worsens fatigue and weakness and reduces kidney functionality complicating treatment of the disease. The fact that volume overload generates excessive cardiovascular stress prompts two important issues: hypertension and heart failure alongside pulmonary edema so doctors must carefully monitor fluid intake. Such serious health risks from these secondary conditions demand an organized management approach to enhance patient medical results.

Stage 2-3 CKD calls for immediate intervention because regular monitoring of anemia and electrolyte imbalances and volume overload helps stop serious health complications. Strategies based on precision medicine which use biomarkers and genetic data enable doctors to design personalized treatments that reduce treatment side effects. The progression of CKD benefits from technological advances which optimize fluid control and waste removal as well as mineral regulation. The management of CKD needs a medical team which combines nephrologists with cardiologists and endocrinologists to support patients throughout the disease process. Through infection control prevention combined with proper prophylactic practices and continuous patient tracking through testing and education programs patients achieve better outcome results.

Assessment of dialysis cycle

The treatment of advanced CKD requires dialysis to perform necessary kidney functions which involve waste removal and fluid maintenance and electrolyte control. The researchers determined dialysis treatment duration based on disease severity by providing three cycles to 63 patients and four cycles to 47 patients as well as two cycles for 43 patients and five cycles for 11 patients. The diverse treatment needs require personalized therapeutic methods. Dialysis plays a vital role during late stages of CKD because it establishes homeostasis and blocks dangerous conditions including uremia together with volume overload and electrolyte imbalances. Dialysis initiation timing and routine kidney function assessments play critical roles for determining the necessary frequency of treatment according to the data findings. Advancements in dialysis technology alongside new techniques hold potential to better patient results while reducing medical complications together with making procedures more effective.

CONCLUSION

The investigation elucidated that hypertension (70.33%) and diabetes mellitus (41.59%) constituted critical risk factors for kidney disease; however, a significant number of subjects were unaware of the importance of regulating blood pressure and glucose levels in the prevention of renal pathology. The researchers ascertained that rural participants represented 63.3% of the cohort, as the prevalence of renal impairment has become increasingly pronounced in these locales in comparison to urban areas over the past decade. The results of the study indicated that smokers accounted for 34.55% of the sample, while alcohol consumption was reported at 58.1% among participants, contributing to the exacerbation of glomerulosclerosis; concomitantly, the conditions of diabetes and hypertension deteriorated further due to alcohol intake, leading to increased renal function decline. The effective management of underlying medical conditions was shown to be essential, as evidenced by improvements in kidney function metrics, specifically GFR, serum creatinine, and BUN levels. Among the patient population, 2.76% were classified in stage 2, 14.15% in stage 3, 20.92% in stage 4, and 62.15% in stage 5, with 182 individuals requiring renal replacement therapy via dialysis. Further research is imperative to explore enhanced treatment modalities and clinical outcomes, given that the current analysis was limited to three centers located in Telangana. It is recommended that new initiatives prioritize the early screening of Chronic Kidney Disease (CKD), while simultaneously fortifying care management strategies and improving healthcare access for rural demographics to mitigate the escalating impact of CKD.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

CKD: Chronic Kidney Disease, **GFR:** Glomerular Filtration Rate, **BUN:** Blood urea nitrogen, **AKI:** Acute Kidney Injury, **DM:** Diabetes Mellitus, **HTN:** Hypertension, **MBD:** Mineral bone disorder, **CVA:** Cerebrovascular accident, **COPD:** Chronic obstructive pulmonary disease, **TB:** Tuberculosis, **CAD:** Coronary artery disease, **CRF:** Case report form, **EMR:** Electronic medical record

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