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PREVALENCE OF CHRONIC KIDNEY DISEASE AMONG DIABETIC PATIENTS IN HAYATABAD MEDICAL COMPLEX PESHAWAR

Muhammad Suliman

Demonstrator Emergency Care Technology IHS KMU Kurram. muhammadsuliman325@gmail.com

Muhammad Danish Khan

MPH Scholar Khyber Medical University Peshawar. khandanis2907@gmail.com

Vikash Suresh

MPH Scholar Khyber medical University Peshawar. vikashsuresh15@gmail.com

Gul Ghutai

MS Epidemiology and Biostatistics Student, Khyber Medical University Peshawar. gulghutai@kmu.edu.pk

Shahab Uddin*

Lecturer Sarhad Institute of Allied Health Sciences, Sarhad University of Science and Information Technology, Peshawar. Corresponding Author Email: shahab.siahs@suit.edu.pk

ABSTRACT

Chronic Kidney Disease (CKD) is a major global health burden, particularly among diabetic individuals, where it acts as a common complication. Diabetes mellitus, especially type 2, is one of the leading causes of CKD, contributing significantly to morbidity, mortality, and healthcare costs. In developing countries like Pakistan, the rising burden of undiagnosed or poorly managed diabetes contributes to a silent increase in CKD prevalence. A better understanding of CKD prevalence among diabetic patients can guide targeted interventions, resource allocation, and awareness programs. To determine the prevalence of chronic kidney disease among patients with diabetes. A descriptive cross-sectional study was conducted on 80 diabetic patients selected using purposive sampling. Data were collected through a self-administered questionnaire that included demographic details, CKD diagnosis test and other things. For sample size calculation Cochran's Formula was used. Results: This study included 80 diabetic participants. Regular doctor visits were not common. About 24% had CKD, and nearly half had undergone diagnostic tests. Symptoms such as fatigue, swelling, and nausea were reported. Almost 48% were referred to nephrologists. Blood pressure comorbidities were also observed. Dietary

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adherence varied, with a third following both diabetic and renal diets.

Keywords: CKD, Diabetes, Peshawar, Prevalence , Patients, Special Diet

INTRODUCTION

The term chronic kidney disease (CKD) refers to problems in kidney structure or function that have lasted for 43 months and have significant health implications. Although we have clarified the classification and risk stratification, as illustrated below, the definition of chronic kidney disease (CKD) has not changed. Although there may be a number of anomalies in kidney structure or function, not all of them have an impact on a person's health and so need to be contextualized. This is why the phrase "with health implications" was added. A variety of abnormalities found during clinical tests that may be insensitive and non-specific to the disease's origin but may occur before a decline in kidney function are collectively referred to as kidney damage. The loss of excretory, endocrine, and metabolic functioning occurs simultaneously in most chronic kidney disorders.

Chronic kidney disease (CKD) is one of the most serious complications of type 2 diabetes mellitus (T2DM). Pakistan, with one of the highest global burdens of diabetes, faces an increasing prevalence of diabetic kidney disease, yet data remain scarce. Early detection using estimated glomerular filtration rate (eGFR) and urine albumin–creatinine ratio (ACR) is essential for timely intervention. (Cureus Et at., 2024 Jun).

Chronic kidney disease (CKD) has a significant impact on public health with a high morbidity and death rate. Most diabetic patients, in the course of their lives, develop diabetic kidney disease. In the least developed nations, its size is outstripping itself. This study aimed to determine the prevalence of chronic kidney disease and associated factors among adult diabetic patients. (Levey AS1 et at., 2024)

Micro- and macro vascular problems result from structural and functional abnormalities in the vasculature of organ systems. Organ damage, malfunction, and ultimately organ failure are the hallmarks of these consequences. The eyes, kidneys, heart, and nerves are among the body organs they impact. Blindness develops from retinopathy, which is brought on by issues with the eyes. Nephropathy and renal failure can be brought on by kidney problems. Hypertension and coronary heart disease are examples of cardiac problems (Luyckx and Brenner et at., 2023).

In contrast to autonomic neuropathy, which is characterized by gastrointestinal, genitourinary, and cardiovascular dysfunctions, long-term peripheral neuropathy is often linked to foot infections, including Charcot joint and ulcers that require amputation. Atherosclerotic cardiovascular disease, which includes coronary heart disease, peripheral arterial disease, and cerebrovascular disease, is prevalent in people with diabetes and contributes significantly to the morbidity and mortality associated with the condition (Mills et al., 2020)

Diabetes has become one of the most urgent and challenging health conditions facing people worldwide, as seen by its steadily rising prevalence. Rapid economic development has led to urbanization and the adoption of modern lifestyle patterns, which have increased the prevalence of diabetes in most parts of the world.

In 2019, 463 million adults between the ages of 20 and 79 had diabetes, making about 9.3% of all adults worldwide. It is anticipated that this number will increase to 578 million by 2030, or 10.2% of the world's adult population, and to 700 million by

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2022.

Diabetes is a complicated, chronic condition that requires ongoing medical attention as well as multiple risk-reduction measures beyond glucose control. The prevalence of chronic kidney disease (CKD) is highly variable in different parts of the world due to various environmental, ethnic, socioeconomic, and rural-urban differences. Diabetes is the leading cause of CKD. This study aimed to estimate the global prevalence of CKD and its associated factors among type 2 diabetes(T2DM) patients, provide scientific evidence for a better understanding of the burden of CKD among diabetes mellitus type 2 patients, and design interventional strategies.

Furthermore, diabetes and its consequences claimed the lives of about 4.2 million adults between the ages of 20 and 99 in 2019. Diabetes-related medical expenses are predicted to be at least 760 billion USD, or 10% of all adult spending. According to estimates, more than 20 million live births (one out of every six) were impacted by diabetes during pregnancy in 2024

According to Li et al. and Fraser and Maarten ,chronic kidney disease (CKD) is a serious public health challenge due to its growing burden. Chronic kidney disease is defined as the progressive loss of kidney function that can occur over a period of time ranging from several months to years; the condition occurs due to the gradual change in the normal structure of the kidney with glomerular filtration rate (GFR) of <60 mL/min per 1.73m2 for over 3 months. Thus, resulting in a continuous reduction in the ability of the kidney to process waste in the blood and perform other functions. (Kidney Med et at., 2021)

Chronic kidney disease (CKD) among diabetic patients is becoming a global health burden with a high economic cost to health systems. The incidence of CKD is higher in low-income countries such as Ethiopia. In Ethiopia, there is no national representative evidence on the burden and determinants of CKD among patients with diabetes. Therefore, this review aimed to estimates the pooled burden and determinants of CKD among patients with diabetes. Published and unpublished literature were identified from several databases and digital libraries, of which twelve articles were selected for final meta-analysis. Significant heterogeneity was observed across studies (I2 = 85.2%), which suggests a random-effects model to estimate pooled burden. The analysis found that the pooled burden of CKD among patients with diabetes was 18.22% (95% CI: 15.07–21.38). Factors such as hypertension (OR = 2.65, 95%, CI: 1.38, 5.09), type of DM (OR = 0.33, 95%, CI: 0.14–0.76), and duration of DM (OR = 0.51, 95%, CI: 0.34–0.77) were found to have significant association with CKD. (Aurlie Med et at., 2021)

Chronic kidney disease (CKD), a worldwide health problem, is caused by abnormality in kidney structure or function and is known to have implications for health. In Sub-Saharan Africa, CKD affects mainly young adults in their productive years and is a major cause of mortality. This may occur through end-stage renal disease (ESRD), and cardiovascular complications which are found to be higher in those with CKD. Diabetes mellitus (DM) is one of the leading causes of CKD and is recognized as one of the main causes of ESRD in the USA. In diabetes, there is excess glucose filtration by the kidney resulting in hyper function of the kidney. The filtering units of the kidney are filled with tiny blood vessels which become narrow and get clogged over time due to high sugar levels in the blood. Without enough

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blood passing through the kidneys gets further damaged, and albumin begins to pass through these filters and ends up in the urine. Progressive damage to the nephrons occurs as a result of the deposition of end products of glucose metabolism on the basement membrane causing CKD which is characterized by rising creatinine and urea levels and decreased estimated GFR. (Kidney Med et at., 2021)

Global recognition of chronic kidney disease (CKD) as a significant public health concern is growing In low- and middle-income countries, the unfavorable consequences of chronic kidney disease (CKD), such as renal failure, accelerated cardiovascular disease (CVD), and premature mortality, have a bigger societal and economic burden .The risk of poor outcomes has been demonstrated to increase as the glomerular filtration rate (GFR) falls below 60 ml/min/1.73 m2 (GFR stages G3a-G5), which is indicative of chronic kidney disease (CKD), which is defined as a loss of half or more of the adult level of normal kidney function. Albuminuria has been shown to be an independent predictor of higher CVD mortality in a comprehensive meta-analysis of a general population cohort including 105,872 participants (Mills et al., 2023).

Methodology

Study Design

The study employed a comparative cross-sectional design conducted from January 2025 to May 2025. The Study was designed at Sarhad Institute of Allied Health Sciences (SIAHS), Sarhad University of Science and Information Technology Peshawar and conducted at Hayat Abad Medical Complex (HMC) Peshawar.

Study Settings

The study setting for this study was Hayatabad Medical Complex.

Study Duration

Study duration for this research work was 6 months w.e.f May 2025 to October 2025.

Sample Size

Sample Size Calculation Using Cochran's Formula (Adjusted for Finite Population) is 80. Assumptions:

Using Cochran's formula adjusted for finite population:

3 Cochran's formula (for infinite population):

- Confidence Level: 95%
- Z-score (Z): 1.96
- Estimated Proportion (p): 0.5 Margin of Error (e): 0.05
- Population Size (N): 100

Final required sample size is 80.

Sampling Technique

Purposive sampling techniques.

Inclusion Criteria:

Patient admitted to hospital with diabetes

Exclusion Criteria

Patient admitted in hospital with other disease than diabetes

Data Collection Procedure

Data was collected from those participants who meet the inclusion criteria after obtaining approval from institutional research committee. In order to collect the

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data consent was taken through the consent form and then research questionnaire was handover to all participants. After taking informed written consent, data was collected by the researcher with the help of attached data collection tool (questionnaire).

Data Analysis Procedure:

Portable IBM SPSS Software was used for this project. Descriptive Statistics were used to get frequencies and percentages for categorical variables. Charts and graphs were created.

Ethical Consideration:

Ethical approval for the current study was obtained from the Ethical Committee of Hayatabad medical complex Peshawar .

Results

This study included 80 diabetic participants. The majority were female and aged 46–30. Most participants resided in rural areas. All were diagnosed with diabetes, and a considerable proportion had lived with the condition for over five years. Regular doctor visits were not common. About 24% had CKD, and nearly half had undergone diagnostic tests. Symptoms such as fatigue, swelling, and nausea were reported. Almost 48% were referred to nephrologists. Blood pressure comorbidities were also observed. Dietary adherence varied, with a third following both diabetic and renal diets.

Table 1: Age

Out of 80 participants, 05 were between 18-30 years , 15 were in 31-45 , 42 were in between 46 to 60 years as shown in table.

Age	Frequency
18–30	05
31–45	15
46–60	42
Over 60	18

Table 2: Gender

Out of 80 participants, 52 (65%) were female and 28 (35%) were male.

Gender	Frequency	Percent
Female	52	65%
Male	28	35%

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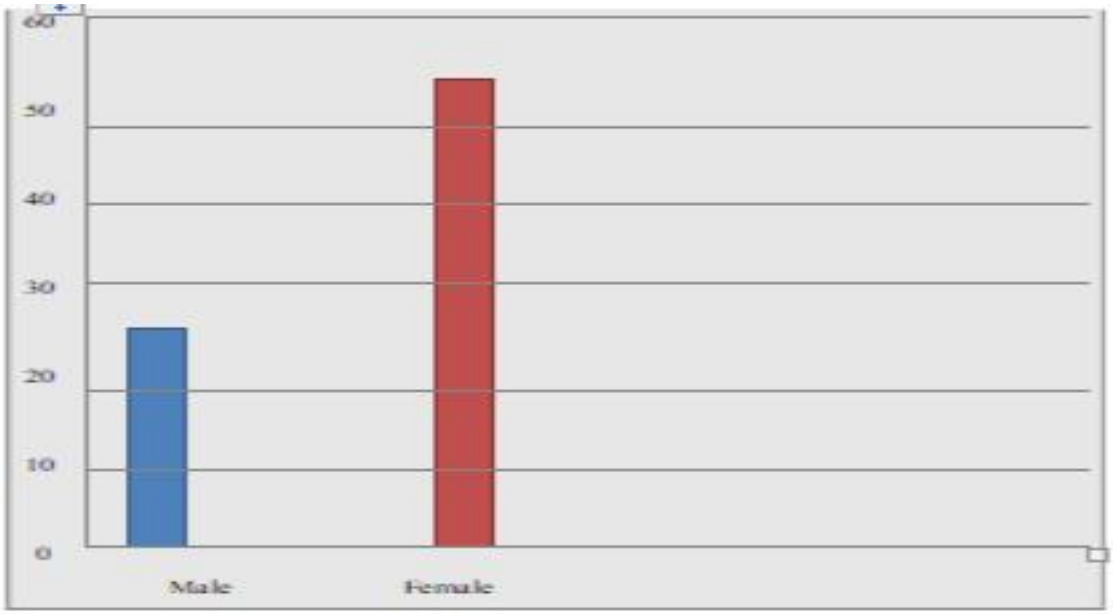


Figure 1: Gender

Table 3: Patient Residency

Out of 80 participants, 42 (52.5%) were from rural areas and 38 (47.5%) were from urban settings.

Residency	Frequency	Percent
Rural	42	52.5%
Urban	38	47.5%

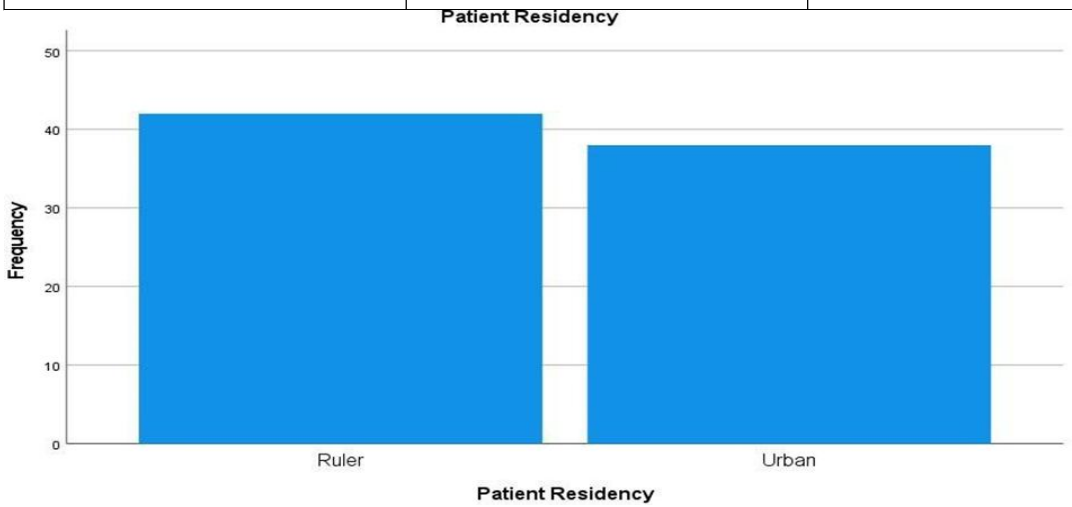


Figure 2: Patient Residency

Table 4: Diagnosed with Diabetes

All 80 participants (100%) had been diagnosed with diabetes.

Diagnosis	Frequency	Percent
Yes	80	100%

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Table 5: Years with Diabetes

The largest proportion (33.8%) had diabetes for 5–10 years, while 17.5% lived with it for 11–15 years.

Years	Frequency	Percent
Less than 5 years	22	27.5%
5–10 years	27	33.8%
11–15 years	14	17.5%
More than 15 years	17	21.3%

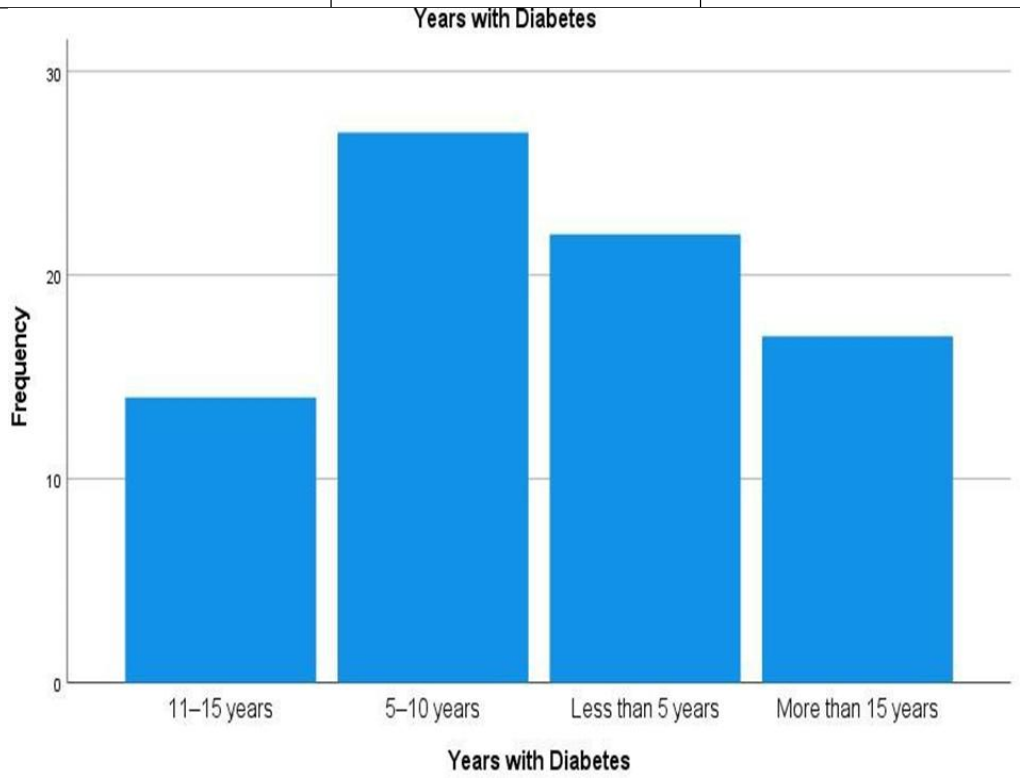


Figure 3: Years with Diabetes

Table 6: Regular Doctor Visit

Among participants, 28.7% visited a doctor once a year, whereas 23.8% never did.

Frequency	Frequency	Percent
Never	19	23.8%
Rarely	21	26.3%
Every 3–6 months	17	21.3%
Once a year	23	28.7%

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Table 7: Diagnosed with CKD

Out of 80 participants, 19 (23.8%) were diagnosed with CKD.

CKD Diagnosis	Frequency	Percent
Yes	19	23.8%
No	61	76.3%

Table 8: Urine Test for Albumin/Protein

Only 47.5% of participants had undergone urine testing for albumin or protein.

Urine Test	Frequency	Percent
Yes	38	47.5%
No	42	52.5%

Table 9: Blood Test for Kidney Function

Slightly more than half (52.5%) had undergone a blood test for kidney function.

Blood Test	Frequency	Percent
Yes	42	52.5%
No	38	47.5%

Table 10: Medication for Kidney Management

Out of all participants, 47.5% were taking kidney-related medications.

Medication	Frequency	Percent
Yes	38	47.5%
No	42	52.5%

Table 11: Symptoms

Fatigue, nausea, and swelling were frequently reported, with 18.8% each experiencing fatigue or nausea.

Symptoms	Frequency	Percent
Changes in urination	11	13.8%
Changes in urination, Nausea or vomiting	7	8.8%
Fatigue or weakness	15	18.8%
Nausea or vomiting	15	18.8%
None of the above	9	11.3%
Swelling in feet or ankles	14	17.5%
Swelling, Fatigue or weakness	9	11.3%

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Table 12: Referral to Nephrologist

Out of all participants, 38 (47.5%) were referred to a nephrologist.

Referred	Frequency	Percent
Yes	38	47.5%
No	42	52.5%

Table 13: High Blood Pressure

Almost half of the diabetic patients (47.5%) also had high blood pressure.

High BP	Frequency	Percent
Yes	38	47.5%
No	42	52.5%

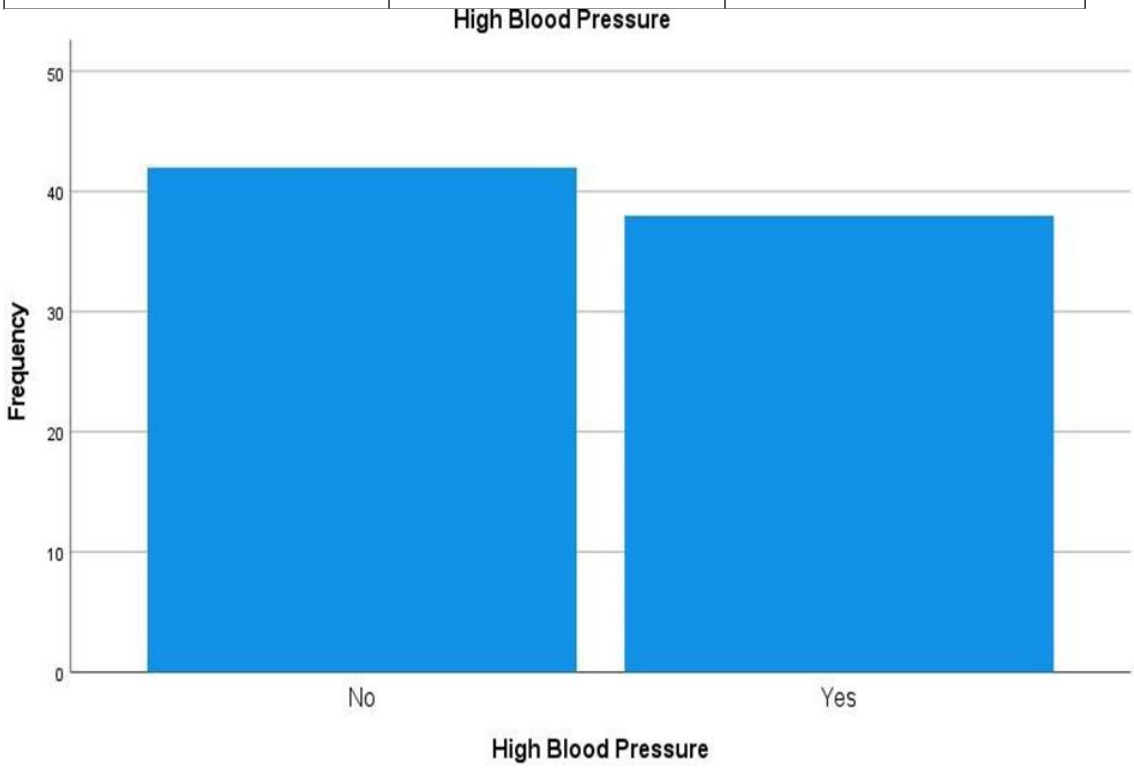


Figure 4: High Blood Pressure

Table 14: Special Diet

A majority followed some form of dietary regulation; 32.5% followed both diabetes and kidney diets.

Diet	Frequency	Percent
Both	26	32.5%
Diabetes diet	19	23.8%
Kidney diet	18	22.5%

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No	17	21.3%

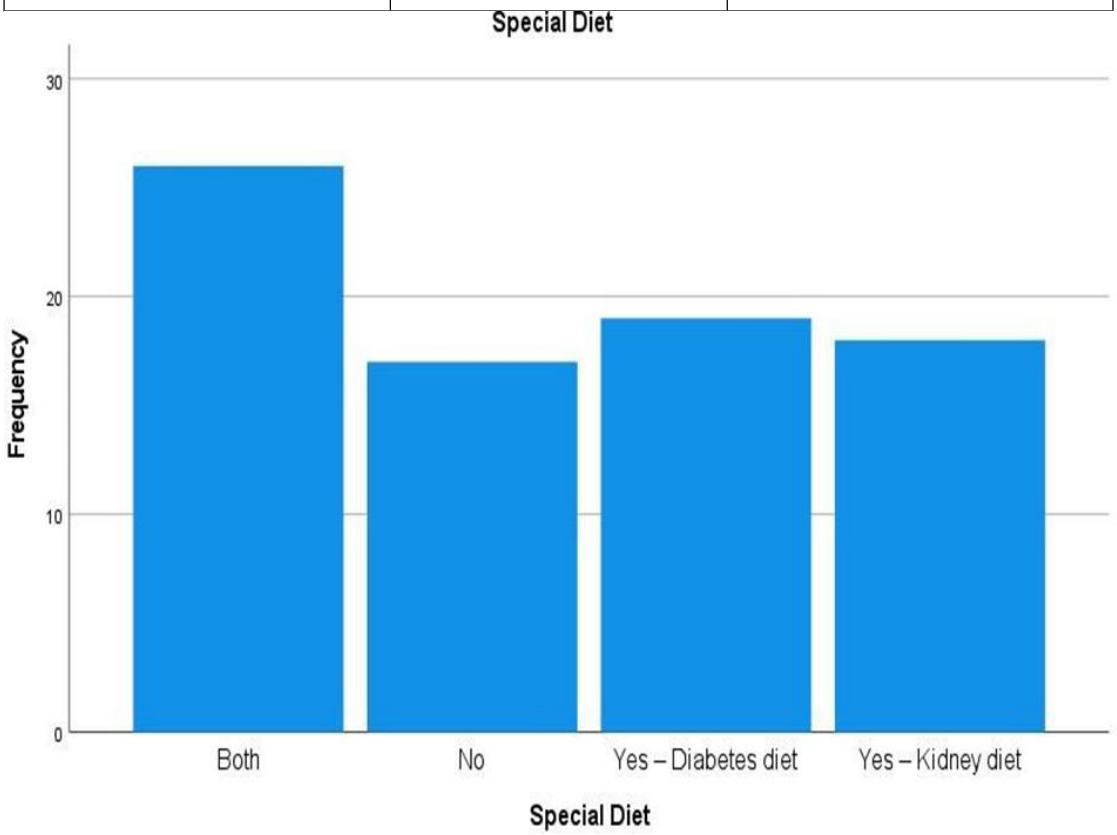


Figure 5: Special Diet

Table 15: Crosstab - Diabetes & CKD

All 19 individuals with CKD were diabetic, indicating a link between diabetes and kidney disease.

Diagnosed with CKD	**Yes**	**No**	**Total**
Diagnosed with Diabetes	19	61	80

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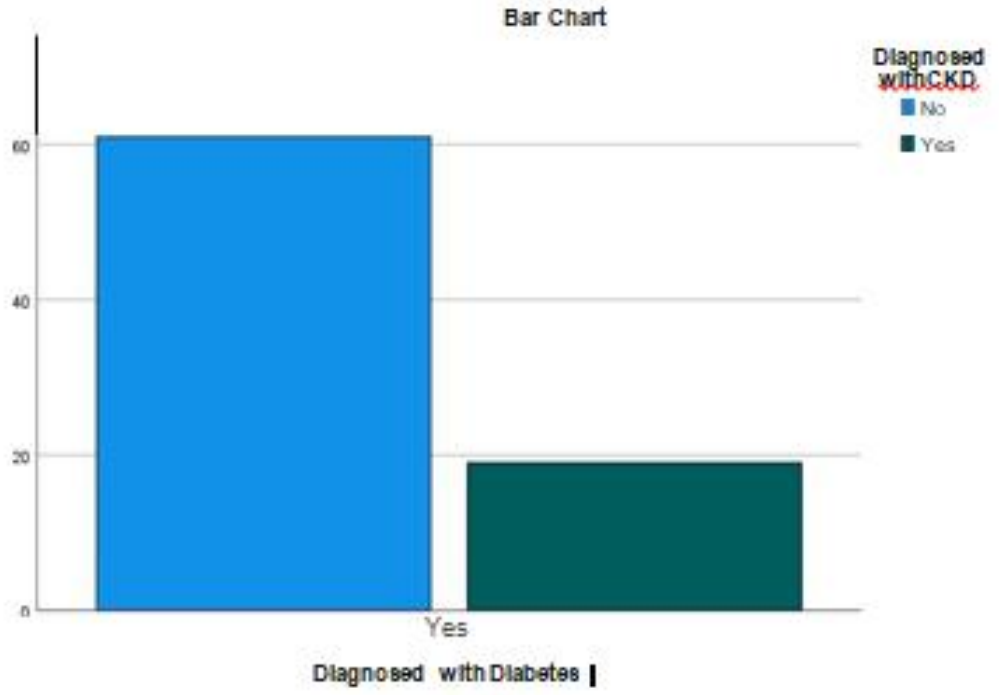


Figure .6: Crosstab - Diabetes & CKD

CONCLUSION

This study highlights a significant prevalence (23.8%) of chronic kidney disease (CKD) among diabetic patients in Peshawar, aligning with global evidence that diabetes is a major contributor to CKD. Most participants were middle-aged females from rural areas, with many having diabetes for over five years and limited access to regular medical care or kidney function testing. Despite the known risks, screening and referrals to nephrologists were inadequate, and adherence to recommended diets and medications was inconsistent. These findings reflect broader challenges seen in low- and middle-income countries, where resource constraints and limited awareness hinder early detection and management of CKD. The strong association between diabetes and CKD in this population underscores the urgent need for systematic screening, improved access to care, and patient education to prevent disease progression. Addressing these gaps is crucial to reducing the growing burden of CKD and improving outcomes for diabetic individuals in Pakistan.

REFERENCES

Khan A, Cheema MF, Fatima R, Cheema SS, Butt Z, Gillani S, et al. Prevalence of chronic kidney disease in a high-risk population in urban Lahore, Pakistan: a cross-sectional study. Cureus. 2024 Jun 27;16(6):e63296. Doi:10.7759/cureus.63296 .

Levey AS, Eckardt KU, Tsukamoto Y, Levin A, Coresh J, Rossert J, et al. Definition and classification of chronic kidney disease: a position statement from kidney disease: improving global outcomes (KDIGO). Kidney Int. (2005) 67(6):2089–100. Doi: 10.1111/j.1523-1755.2005.00365.

DeFronzo RA, Reeves WB, Awad AS. Pathophysiology of diabetic kidney disease: impact of SGLT2 inhibitors. Nat Rev Nephrol. (2021) 17(5):319–34. Doi:

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http://amresearchreview.com/index.php/Journal/about

10.1038/s41581-021-00393-

Kumar M, Dev S, Khalid MU, Siddenthi SM, Noman M, John C, et al. The bidirectional link between diabetes and kidney disease: mechanisms and management. Cureus. (2023) 15(9):1–13. Doi: 10.7759/cureus.45615.

Khanijou V, Zafari N, Coughlan MT, MacIsaac RJ, Ekinci EI. Review of potential biomarkers of inflammation and kidney injury in diabetic kidney disease. Diabetes Metab Res Rev. (2022) 38(6):1–40. Doi: 10.1002/dmrr.3556.

Elshahat S, Cockwell P, Maxwell AP, Griffin M, O'Brien T, O'Neill C. The impact of chronic kidney disease on developed countries from a health economics perspective: a systematic scoping review. PLoS One. (2020) 15(3):1–19. Doi: 10.1371/journal.pone.0230512.

Francis A, Harhay MN, Ong ACM, Tummalapalli SL, Ortiz A, Fogo AB, et al. Chronic kidney disease and the global public health agenda: an international consensus. Nat Rev Nephrol. (2024) 20(July):473–85. Doi: 10.1038/s41581-024-00820-6.

International Diabetes Federation. IDF Diabetes Atlas. 9th ed. Brussels, Belgium: International Diabetes Federation; 2019.

Gansevoort RT, Correa-Rotter R, Hemmelgarn BR, Jafar TH, Heerspink HJ, Mann JF, Matsushita K, Wen CP: Chronic kidney disease and cardiovascu lar risk: epidemiology, mechanisms, and prevention. Lancet 2023, 382:339–352

Levey AS , Atkins R , Coresh J , Cohen EP , Collins AJ , Eckardt KU , et al. Chronic kidney disease as a global public health problem: Approaches and initiatives -

A position statement from Kidney Disease Improving Global Outcomes. Kidney Int . 2007;72(3):247–259

Stanifer JW , Muiru A , Jafar TH , Patel UD . Chronic kidney disease in low- and middleincome countries. Nephrol Dial Transplant .;31(6):868–874

Naghavi M, Wang H, Lozano R, Davis A, Liang X, Zhou M, et al. Global, re- gional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 19902013: A systematic analysis for the Global Burden of Disease Study. Lancet . 2015;385(9963):117–171 [Internet] Available from:. doi: 10.1016/S0140-6736(14)61682-2

Abd Elhafeez S , Bolignano D , D'Arrigo G , Dounousi E , Tripepi G , Zoccali C . Preva-lence and burden of chronic kidney disease among the general population and high-risk groups in Africa: A systematic review. BMJ Open .;8(1)

Naicke S . End-stage renal disease in Sub-Saharan Africa. Kidney Int Suppl . 2013;3:161–163

Stanifer JW, Jing B, Tolan S, Helmke N, Mukerjee R, Naicker S, et al. The epi-demiology of chronic kidney disease in sub-Saharan Africa: A systematic re-view and meta-analysis. Lancet Glob Heal .;2(3):e174–e181 [Internet] Avail-able from:. doi: 10.1016/S2214-109X(14)70 0 02-6

Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int Suppl.;3:1–150

Vestergaard SV, Christiansen CF, Thomsen RW, et al. Identification of patients with CKD in medical databases: a comparison of different algorithms. Clin J Am Soc Nephrol. 2021;16:543– 551

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
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Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

HillNR,FatobaST,OkeJL,etal.Globalprevalenceofchronickidneydisease a systematic review and meta-analysis. PLoS One. 2022;11:e0158765

Fischbacher CM, Bhopal R, Rutter MK, Unwin NC, Marshall SM, White M, Alberti KG: Microalbuminuria is more frequent in South Asian than in European origin populations: a comparative study in Newcastle, UK. Diabet Med 2023, 20:31–36

Kidney Disease: Improving Global Outcomes (KDIGO) Blood Pressure Work Group: KDIGO Clinical practice guideline for the management of blood pressure in chronic kidney disease. Kidney Inter Suppl 2022, 2:337–414

Baltatzi M, Savopoulos C, Hatzitolios A: Role of angiotensin converting enzyme inhibitors and angiotensin receptor blockers in hypertension of chronic kidney disease and renoprotection. study results. Hippokratia, 15:27–32

Su-hernandez L, Abascal-macias A, Mendez-bueno FJ, Epidemiologic and demographic aspects of peritoneal dialysis in Mexico. Perit Dial Int 16:362–365