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Renal Disease Patterns: Insights from Native Kidney Biopsies - An Experience at LUMHS

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ABSTRACT

Background: Renal biopsy remains the gold standard for diagnosing biopsy-proven renal disease and can be associated with significant morbidity in adults. The determination of the renal disease spectrum through biopsy has a key role in clinical decision-making, particularly in patients with nephrotic syndrome, nephritic syndrome, acute kidney injury, and chronic kidney injury. The goal of this study is to evaluate the prevalence of renal disease in renal biopsy patients and investigate associated demographic factors. **Objective:** To assess the prevalence of renal disease in renal biopsy patients at Liaquat University Hospital, Hyderabad. **Study Design:** Descriptive cross-sectional study. **Duration and Place of Study:** The study was conducted from December 2024 to March 2025 at the Department of Nephrology, Liaquat University Hospital, Hyderabad. **Methodology:** A total of 80 patients aged 18-60 years, who underwent renal biopsy for suspected renal disease, were included. Data on demographic factors such as age, gender, socioeconomic status, and comorbidities were collected. Renal biopsy samples were analyzed by senior renal pathologists for histopathological diagnosis. **Results:** The most prevalent diagnosis was primary glomerulonephritis, found in 50% of the patients, followed by secondary glomerulonephritis (25%), tubulointerstitial diseases (15%), and renal vascular diseases (10%). Hypertension showed a trend towards higher prevalence in PGN (p=0.061). Socioeconomic status was significantly associated with tubulointerstitial diseases (p=0.007). **Conclusion:** Primary glomerulonephritis is the most prevalent renal disease in our cohort.

INTRODUCTION

Renal biopsy plays a fundamental role in nephrology for insight into renal disease pathology in patients. Adult-onset primary glomerulonephritis (GN) is a predominant biopsy-proven renal disease in adults.[1] Membranous nephropathy, IgA nephropathy, and focal segmental glomerulosclerosis (FSGS) are all prevalent conditions in these patients.[2] Immunoglobulin A deposition in the glomeruli characterizes IgA nephropathy, which is one of the principal global manifestations of primary GN.[3] Membranous nephropathy is characterized by thickening of the glomerular basement membrane and proteinuria in combination with anti-podocyte antigen PLA2R autoantibody.[4] Scarring of glomerular segments defines FSGS, which is a primary cause of nephrotic syndrome.[5] All of these conditions have variable manifestations of proteinuria, hematuria, and impaired renal function that need specific treatments to manage their symptoms.

Secondary glomerulonephritis comprises damage to the kidneys secondary to systemic illness.[6] Notable examples include lupus nephritis, diabetic nephropathy, and GN secondary to vasculitis. Secondary lupus nephritis due to systemic lupus erythematosus (SLE) results from deposition of renal tissue by immune complexes leading to damage and inflammation.[7] Secondary diabetic nephropathy due to persistent hyperglycemia results in enlargement of the glomerulus, thickening of the basement membrane, and sclerosis.[8] GN secondary to vasculitis, for instance in ANCA-associated vasculitis, results in necrotizing changes in the glomerulus secondary to small-vessel inflammation.[9] Secondary GN is treated in general by multidisciplinary approaches that address not only renal but systemic disease to prevent progressive renal damage.

Tubulointerstitial nephritis (TIN) is yet another distinctive pattern in renal biopsies in adults.[10] TIN affects

more of the tubules and interstitium than the glomeruli and may be of an acute or chronic nature. Acute TIN is more secondary to drugs in nature, with drugs like antibiotics, NSAIDs, and proton pump inhibitors causing it in most cases.[11] Symptoms of TIN include fever, rash, eosinophilia, and renal impairment of sudden onset.[12] TIN tends to follow chronic conditions like obstructive uropathy, chronic infections, or systemic autoimmune diseases in cases of chronic TIN. TIN on microscopy is characterized by interstitial inflammation, fibrosis, and tubular atrophy. Timely recognition of TIN followed by withdrawal of causative agents or cure of causative conditions is needed to prevent damage that is not reversible and to preserve renal function.[13]

Vascular nephropathy defines renal diseases that have their origin in renal vasculature, affecting conditions like hypertensive nephrosclerosis, thrombotic microangiopathy (TMA), and renal artery stenosis.[14] Uncontrolled chronic hypertension leading to hypertensive nephrosclerosis results in thickening of arteries, ischemia of the glomerulus, and sclerosis of vessels in turn. TMA affecting conditions like hemolytic uremic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP) is associated with endothelial damage, formation of microvascular thrombi, and impairment of organs. Renal artery stenosis due to fibromuscular dysplasia or atherosclerosis impairs renal circulation to induce ischemic nephropathy. All these vascular diseases reflect interrelation of systemic circulation with renal disease and establish that cardiovascular risks need to be managed while vascular diseases need to be treated to stop further renal damage.[15] All these patterns reflect diversity of biopsy-proven renal disease in adults in leading to specific diagnoses and specific treatments.[16]

Immunoglobulin A nephropathy (IgAN) has been found to be a leading cause of glomerular disease in many countries by biopsy-based studies. In Korea, IgAN has been found to be leading in primary glomerulonephritis at 28.3%.[17]

However, in the Middle East, the patterns of glomerular diseases differ significantly from other regions. According to the Saudi Arabian Registry statistics, the most frequently diagnosed glomerular disease is 21.3% for focal segmental glomerulosclerosis followed by 20.7% for membranoproliferative glomerulonephritis while only 6.5% of cases have IgAN. In addition to primary glomerular diseases, lupus nephritis (LN) is the most common secondary glomerular pathology in the region.[18] Similarly in India, biopsy-based estimations reveal that in 31.11% of cases, focal segmental glomerulosclerosis is the foremost glomerular disorder.[19] Mubarak et al. (2010), in their study of 1809 native renal biopsies, reported that FSGS was at 29% of cases for the foremost primary glomerulonephritis. Notably, precise regional statistics lack due to the absence of a national renal biopsy registry.[20]

Understanding the pattern of biopsy-proven renal diseases in adults is significant in recognizing regional trends, influencing clinical practice, and shaping public health strategy. Renal diseases exhibit regional and population heterogeneity that is influenced by genes, environment, and socioeconomics. Despite improvements in diagnostic technology, detailed statistics on biopsy-proven renal pathology in specific regions are scarce. Through this research, these knowledge gaps shall be bridged to determine leading glomerular diseases that have implications for designing focused prevention, early detection, and cure to ultimately improve patient outcomes as well as plan for the provision of healthcare.

METHODOLOGY

This descriptive cross-sectional research was carried out from December 2024 to March 2025 at Department of Nephrology, Liaquat University Hospital Hyderabad. There were included in this research 80 patients who have undergone renal biopsy for biopsy-proven renal disease (BPRD). Sample size was estimated by WHO software on the basis of 95% confidence interval, margin of error of 10% and estimated prevalence of focal segmental glomerulosclerosis of 29%.[20]

Patients were enrolled through a non-probability consecutive sampling method. Eligible participants included adults aged 18 to 60 years who underwent renal biopsy for nephrotic syndrome, nephritic syndrome, acute kidney injury, or chronic kidney injury with normal-sized kidneys on ultrasound. Nephrotic syndrome was defined as proteinuria exceeding 3 g/day with serum albumin levels below 2.5 g/dl, accompanied by edema. Nephritic syndrome was characterized by hematuria, hypertension (≥140/90 mmHg), oliguria (urine output <400 ml/24 hours), and edema. Acute kidney injury was identified based on a rise in serum creatinine by 0.3 mg/dl within 48 hours or a reduction in urine output to 0.5 ml/kg/hour for 6 hours. Chronic kidney injury was defined as a persistent increase in serum creatinine exceeding 1.5 mg/dl for more than three months.

Patients with uncontrolled blood pressure (systolic blood pressure of more than 160 mmHg, diastolic blood pressure of more than 100 mmHg), thrombocytopenia (platelets of fewer than 100,000 cells/mm^3), INR of more than 1.2, or having received antiplatelet agents in the last seven days (e.g., aspirin or clopidogrel) or ultrasonographic measurement of small kidneys of less than 7 cm with loss of corticomedullary distinction, multiple cysts, hydronephrosis, or perinephric abscesses were excluded.

Approval for carrying out research was given by College of Physicians and Surgeons Pakistan and Ethical Review Committee of Liaquat University of Medical and Health Sciences, Jamshoro. Written consent was obtained from all of the subjects after briefing them on objectives of research as well as on procedures to be used. Demographic characteristics of age and residency status were documented. Paramedical workers measured height by standardized method. BMI was calculated from height (taken to the nearest of 0.1 cm while subjects remained in no-shoe condition with erect posture) and from weight (taken to the nearest of 0.1 kg on flat floor by digital balance while subjects wore light apparels).

All renal biopsies were performed by trainees in nephrology in ultrasound-guidance. All pre-procedure

screenings such as complete blood count, prothrombin time, partial thromboplastin time, and measurement of blood pressure were taken for ensuring patient safety. The procedure was performed in patient's prone position. Sterile draping was put on ultrasound probe after applying antiseptic to the skin. Local anaesthesia was administered by giving lidocaine. Two cores of renal tissue were obtained by inserting automatic biopsy gun of 16-gauge (Bard Monopty) to fire on reaching renal capsule while asking the patient to hold their breath. Specimens were preserved in medium containers and submitted for histopathologic evaluation.

A senior renal pathologist, in collaboration with nephrologists, reviewed all biopsies to ensure accurate classification and consistency of diagnoses. Histopathological patterns were categorized as follows: primary glomerulonephritis (PGN) subtypes such as minimal change disease (MCD), focal segmental glomerulosclerosis (FSGS), membranous nephropathy (MN), IgA nephropathy (IgAN), IgM nephropathy (IgMN), membranoproliferative glomerulonephritis (MPGN), crescentic glomerulonephritis (CresGN), diffuse proliferative glomerulonephritis (DPGN), and post-infectious glomerulonephritis (PIGN); secondary glomerulonephritis (SGN) including lupus nephritis (LN), diabetic nephropathy (DN), amyloidosis (AM), Henoch–Schönlein purpura (HSP), and light chain deposit disease (LCDD); tubulointerstitial nephritis (TIN) characterized by interstitial and tubular inflammation; and vascular nephropathy (VN) identified by fibrin clots with endothelial infiltration on light microscopy. Data were analyzed with Version 22 of IBM SPSS. Quantitative variables such as age, height, weight, and BMI were reported as mean ± SD for normally distributed variables or median with inter-quartile range (IQR) for non-normally distributed variables, analyzed by Kolmogorov-Smirnov testing. Categorical variables such as gender, socio-economic status, marriage status, residency, comorbid conditions like diabetes and hypertension, indication for renal biopsy, and biopsy results were reported as counts and percentages. Stratification was performed by age, gender, socio-economic status, marriage status, residency, diabetes, hypertension, and indication for biopsy to account for effect modifiers. Chi-square or Fisher's exact tests were employed for comparing groups where p-value of <0.05 was used to ascertain statistical significance.

RESULTS

The mean age was 42.5±9.46 years, with a mean weight of 73.86±7.57 kg and height of 168.86±4.99 cm. The mean BMI was 25.85±1.97 kg/m^2. Regarding gender, 60% were male (n=48) and 40% were female (n=32). The majority were from a middle socioeconomic status (73.8%), and most were married (91.3%). Most participants resided in urban areas (68.8%), and 46.3% had diabetes, while 35% had hypertension. The main indications for renal biopsy were chronic kidney injury (45%), followed by nephrotic syndrome (20%) (as shown in Table I).

Table I

Patient Demographics

Demographics		Mean ± SD
Age (years)		42.475±9.46
Weight (Kg)		73.862±7.57
Height (m)		168.862±4.99
BMI (Kg/m^2)		25.845±1.97
Gender	Male n (%)	48 (60%)
	Female n (%)	32 (40%)
Socioeconomic Status	Low n (%)	13 (16.3%)
	Middle n (%)	59 (73.8%)
	Rich n (%)	8 (10%)
Marriage Status	Unmarried n (%)	7 (8.8%)
	Married n (%)	73 (91.3%)
Residence	Rural n (%)	25 (31.3%)
	Urban n (%)	55 (68.8%)
Diabetes	Yes n (%)	37 (46.3%)
	No n (%)	43 (53.8%)
Hypertension	Yes n (%)	28 (35%)
	No n (%)	52 (65%)
Indication for Renal Biopsy	Nephrotic Syndrome n (%)	16 (20%)
	Nephritic Syndrome n (%)	13 (16.3%)
	Acute Kidney Injury n (%)	15 (18.8%)
	Chronic Kidney Injury n (%)	36 (45%)

The most common diagnosis was primary glomerulonephritis, affecting 50% (n=40) of patients, followed by secondary glomerulonephritis (25%, n=20), tubulointerstitial diseases (15%, n=12), and renal vascular diseases (10%, n=8) (as shown in Table II).

Table II

Renal disease patterns on biopsy

Anemia Types	Frequency	% age
Primary glomerulonephritis	40	50%
Secondary glomerulonephritis	20	25%
Tubulointerstitial diseases	12	15%
Renalvascular diseases	8	10%

In primary glomerulonephritis, the p-value for age was 0.361, suggesting no significant difference between the age groups. Gender, BMI, socioeconomic status, marital status, and residence had no significant associations either, with p-values ranging from 0.432 to 1.000. However, hypertension had a trend toward significance (p=0.061), with a higher prevalence of primary glomerulonephritis among those with hypertension (64.3%). Regarding the indication for renal biopsy, nephrotic syndrome had a p-value of 0.087, indicating a marginally significant association (as shown in Table III).

For secondary glomerulonephritis, age had no significant association (p=1.000). Gender showed a trend with a p-value of 0.114, where a higher proportion of females were affected. Socioeconomic status, marital status, and residence had no significant associations. Diabetes had a p-value of 0.154, suggesting no strong association with the disease. The indication for renal biopsy also showed no significant differences, with all p-values above 0.05 (as shown in Table III).

In tubulointerstitial diseases, socioeconomic status was significantly associated (p=0.007), with the highest prevalence among those with a rich status (50%). Other factors such as age, gender, BMI, marital status, residence, and diabetes had no significant associations (p-values ranged from 0.285 to 1.000). Hypertension also showed no significant impact (p=0.526). The indication for renal biopsy had a p-value of 0.285, suggesting no strong association (as shown in Table III).

For renal vascular diseases, no demographic factor showed a significant association, with p-values above 0.05 for all comparisons. The indication for renal biopsy also had no significant associations, with a p-value of 0.549 (as shown in Table III and Graph-I).

Table III

Association Renal Disease Patterns with Demographic Factors

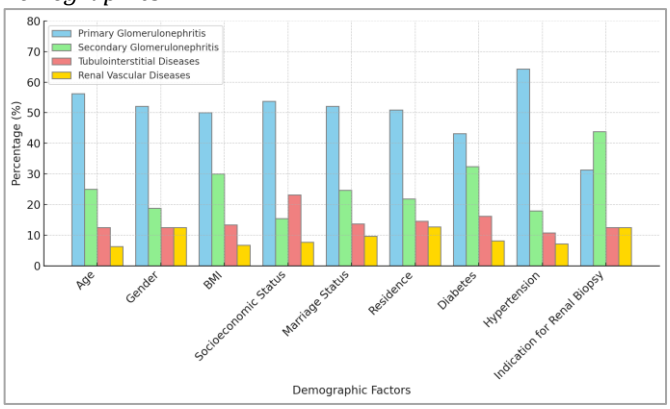
Demographic Factors		Primary glomerulonephritis		p-value
		Yes n(%)	No n(%)	
Age (years)	18-40	18 (56.3%)	14 (43.8%)	0.361
	>40	22 (45.8%)	26 (54.2%)	
Gender	Male	25 (52.1%)	23 (47.9%)	0.648
	Female	15 (46.9%)	17 (53.1%)	
BMI (Kg/m^2)	≤25	15 (50%)	15 (50%)	1.000
	>25	25 (50%)	25 (50%)	
Socioeconomic Status	Low	7 (53.8%)	6 (46.2%)	0.868*
	Middle	30 (50.8%)	29 (49.2%)	
	Rich	3 (37.5%)	5 (62.5%)	
Marriage Status	Unmarried	2 (28.6%)	5 (71.4%)	0.432*
	Married	38 (52.1%)	35 (47.9%)	
Residence	Rural	12 (48%)	13 (52%)	0.809
	Urban	28 (50.9%)	27 (49.1%)	
Diabetes	Yes	16 (43.2%)	21 (56.8%)	0.262
	No	24 (55.8%)	19 (44.2%)	
Hypertension	Yes	18 (64.3%)	10 (35.7%)	0.061
	No	22 (42.3%)	30 (57.7%)	
Indication for Renal Biopsy	Nephrotic Syndrome	5 (31.3%)	11 (68.8%)	0.087
	Nephritic Syndrome	8 (61.5%)	5 (38.5%)	
	Acute Kidney Injury	11 (73.3%)	4 (26.7%)	
	Chronic Kidney Injury	16 (44.4%)	20 (55.6%)	
Demographic Factors		**Secondary glomerulonephritis**		**p-value**
		Yes n(%)	**No n(%)**	
Age (years)	18-40	8 (25%)	24 (75%)	1.000
	>40	12 (25%)	36 (75%)	
Gender	Male	9 (18.8%)	39 (81.3%)	0.114
	Female	11 (34.4%)	21 (65.6%)	
BMI (Kg/m^2)	≤25	9 (30%)	21 (70%)	0.424
	>25	11 (22%)	39 (78%)	
Socioeconomic Status	Low	2 (15.4%)	11 (84.6%)	0.434*
	Middle	17 (28.8%)	42 (71.2%)	
	Rich	1 (12.5%)	7 (87.5%)	
Marriage Status	Unmarried	2 (28.6%)	5 (71.4%)	1.000*
	Married	18 (24.7%)	55 (75.3%)	
Residence	Rural	8 (32%)	17 (68%)	0.330
	Urban	12 (21.8%)	43 (78.2%)	
Diabetes	Yes	12 (32.4%)	25 (67.6%)	0.154
	No	8 (18.6%)	35 (81.4%)	
Hypertension	Yes	5 (17.9%)	23 (82.1%)	0.417*
	No	15 (28.8%)	37 (71.2%)	
Indication for Renal Biopsy	Nephrotic Syndrome	7 (43.8%)	9 (56.3%)	1.000
	Nephritic Syndrome	1 (7.7%)	12 (92.3%)	
	Acute Kidney Injury	4 (26.7%)	11 (73.3%)	
	Chronic Kidney Injury	8 (22.2%)	28 (77.8%)	
Demographic Factors		**Tubulointerstitial diseases**		**p-value**
		Yes n(%)	**No n(%)**	
Age (years)	18-40	4 (12.5%)	28 (87.5%)	0.754
	>40	8 (16.7%)	40 (83.3%)	
Gender	Male	8 (16.7%)	40 (83.3%)	0.754
	Female	4 (12.5%)	28 (87.5%)	
BMI (Kg/m^2)	≤25	4 (13.3%)	26 (86.7%)	1.000
	>25	8 (16%)	42 (84%)	
Socioeconomic Status	Low	3 (23.1%)	10 (76.9%)	0.007*
	Middle	5 (8.5%)	54 (91.5%)	
	Rich	4 (50%)	4 (50%)	
Marriage Status	Unmarried	2 (28.6%)	5 (71.4%)	0.587*
	Married	10 (13.7%)	63 (86.3%)	
Residence	Rural	4 (16%)	21 (84%)	1.000*
	Urban	8 (14.5%)	47 (85.5%)	
Diabetes	Yes	6 (16.2%)	31 (83.8%)	0.777
	No	6 (14%)	37 (86%)	
Hypertension	Yes	3 (10.7%)	25 (89.3%)	0.526*
	No	9 (17.3%)	43 (82.7%)	
Indication for Renal Biopsy	Nephrotic Syndrome	2 (12.5%)	14 (87.5%)	0.285*
	Nephritic Syndrome	3 (23.1%)	10 (76.9%)	
	Acute Kidney Injury	0 (0%)	15 (100%)	
	Chronic Kidney Injury	7 (19.4%)	29 (80.3%)	
Demographic Factors		**Renalvascular diseases**		**p-value**

		Yes n(%)	No n(%)	
Age (years)	18-40	2 (6.3%)	30 (93.8%)	0.466*
	>40	6 (12.5%)	42 (87.5%)	
Gender	Male	6 (12.5%)	42 (87.5%)	0.466*
	Female	2 (6.3%)	30 (93.8%)	
BMI (Kg/m^2)	≤25	2 (6.7%)	28 (93.3%)	0.703*
	>25	6 (12%)	44 (88%)	
Socioeconomic Status	Low	1 (7.7%)	12 (92.3%)	0.731*
	Middle	7 (11.5%)	52 (88.1%)	
	Rich	0 (0%)	8 (100%)	
Marriage Status	Unmarried	1 (14.3%)	6 (85.7%)	1.000*
	Married	7 (9.6%)	66 (90.4%)	
Residence	Rural	1 (4%)	24 (96%)	0.424*
	Urban	7 (12.7%)	48 (87.3%)	
Diabetes	Yes	3 (8.1%)	34 (91.9%)	0.719*
	No	5 (11.6%)	38 (88.4%)	
Hypertension	Yes	2 (7.1%)	26 (92.9%)	0.706*
	No	6 (11.5%)	46 (88.5%)	
Indication for Renal Biopsy	Nephrotic Syndrome	2 (12.5%)	14 (87.5%)	0.549*
	Nephritic Syndrome	1 (7.7%)	12 (92.3%)	
	Acute Kidney Injury	0 (0%)	15 (100%)	
	Chronic Kidney Injury	5 (13.9%)	31 (86.1%)	

***Fischer Exact Test**

Graph I

Distribution of Renal Disease Patterns Across Demographics



DISCUSSION

The results highlight primary glomerulonephritis as the major renal disease, occurring in 50% of the study group. The finding supports previous research, where glomerulonephritis has been identified as a prevalent renal disease, with its highest occurrence being in young age groups. The association of primary glomerulonephritis with hypertension (p=0.061) indicates hypertension can be a causative, rather than concomitant, factor for the occurrence of glomerular damage, as with other renal disease studies.

The study also identified 25% of subjects with secondary glomerulonephritis, with minimal demographic association with the prevalent factors, and this disease may be more homogenously represented in varying populations of patients. Secondary disease etiologies and infections may not be represented demographically as variably as primary glomerulonephritis.

Tubulointerstitial diseases were also present in 15% of the subjects, with significant association with socioeconomic status (p=0.007), suggesting lower socioeconomic status subjects are more exposed to risk factors such as exposure to environment-related toxin and infections, proven causative factors for tubulointerstitial disease. Lack of significant association with other factors such as diabetes and hypertension may be more extrinsic environment-related and not intrinsic factors, unlike for glomerulonephritis.

Renal vascular disease contributed least (10%), and demographic factors were not associated with significant correlations, implying renal vascular disease may be more sporadic, or associated with a variety of more unpredictable factors, including genetic predisposition, or rare events such as thromboembolic disease.

Our findings are indicative of primary glomerulonephritis (PGN) and more significantly minimal change disease (MCD) and focal segmental glomerulosclerosis (FSGS) and lupus nephritis (LN) being present in our cohort. The findings of the present study also concur with previous research, i.e., Turner et al. [17] Puspitasari et al. [18] and Abbasi et al. [19] where the identical primary renal disease, i.e., MCD and FSGS, were also present in other populations.

Turner et al. [17] also mentioned tubulointerstitial nephritis and hypertensive glomerulosclerosis as predominating in their PLWH group, and this suggests the range of renal disease presentations in populations with immunosuppression. Similarly, Muthukuda et al. [20] mentioned FSGS and LN being the major histological diagnoses in Sri Lanka, and these were also similar in our study, with FSGS and LN being frequent in both the young and elderly. The similarity of our data suggests a global pattern of FSGS and LN in populations, including PLHIV, and also suggests the heterogeneity of the distribution of these illnesses between populations of different age and geography. For instance, even though Abbasi et al. [19] had a higher proportion of IgA nephropathy (16%) being the major cause of PGN, this did not present with such prevalence in our study, where minimal change disease (38.9%) had the highest proportion of PGN.

Another factor for similarities and differences could be access and practice of healthcare in regions. The study of Muthukuda et al. [20] also had identified nephrotic range proteinuria as the most common indication for renal biopsy, also in accordance with our study. However, Yim et al. [21] in their group of Koreans had identified IgA nephropathy as the most common primary

glomerulonephritis, with 37.4%, much higher compared with our result. This could be because geographical and race-related factors could influence the prevalence of some kidney disease, such as IgA nephropathy, more common in East Asia.

A study also determined factors for earlier lupus nephritis as shown by Puspitasari et al.'s [18] where lupus nephritis also commonly manifested in young female subjects. Similarly, Turner et al. [17] also emphasized renal biopsy for kidney disease diagnosis in HIV patients where renal biopsies resulted in earlier treatment of CKD and nephrotic syndrome patients.

In contrast, our study did not demonstrate the widespread prevalence of hypertensive nephrosclerosis and diabetic nephropathy of Muthukuda et al. [20] where elderly populations had higher numbers of aforementioned conditions. The reason for this may be the relatively young age group of our cohort where primary glomerulonephritides such as MCD and FSGS were more prevalent. But similar trends of age-related nephropathy can be noted in Yim et al. [21] where elderly patients had more cases of diabetic nephropathy and hypertensive nephrosclerosis, fewer of whom were present in our young cohort.

There are several limitations of our study, and these must be considered. The study being single-centered and being conducted in a single geographical location means external validity of our data for other regions with different demographic profiles and different systems of healthcare may be limited. The sample size, though adequate for primary analysis, remains relatively small compared with larger, multi-centered studies, and these could have provided a greater perspective of kidney disease prevalence. The study also doesn't include data on long-term follow up of patients after treatment and biopsy, and this could have yielded more data on kidney disease natural history and treatment. With these limitations, the study still has significant contributions towards knowledge of renal disease on biopsy established in our setting and also indicates directions for future research.

CONCLUSION

Our study has identified primary glomerulonephritis, occurring in half of the patients, as the most prevalent diagnosis among patients with renal disease confirmed on biopsy, followed by secondary glomerulonephritis, tubulointerstitial disease, and renal vascular disease. The result supports the predominance of glomerulonephritis as a major renal impairment-causing disease in adults and emphasizes the need for specific treatment and diagnostic modalities for such illnesses. The study also provides evidence for renal disease and its associated risk factors, demonstrating the clinical utility of renal biopsy in clinical practice.

*Authors' Contribution

The authors have significantly contributed to the manuscript in the following ways:

Samreen Khalil Spearheaded the study's conceptualization, wrote the initial draft of the article, and was responsible for gathering hospital data.

Pooran Mal Played a key role in the development of the article, contributed to the study's conceptual framework, and was involved in the analysis and interpretation of the data. Other Authors also contributed to the study and approved the final version.

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