

# CHRD 2024: Abstract Submission Form

**Presenter Name**

Jasmine Manji

**Presenter Status**

Undergraduate Students

**Role in the project**

Perform Experiments  
Analyze Data  
Write Abstract

**Research Category**

Clinical

**Title**

Kidney Biopsies in Diabetes: A Comparative Study of Youth and Adults

**Background**

Youth with type 2 diabetes (T2D) are at high risk of kidney failure.

**Objective**

We sought to evaluate differences in biopsy findings between youth and adults with diabetes in Manitoba that might explain differences in rates of progression. We hypothesized that youth with diabetes have more non-diabetic kidney pathology than adults.

**Methods**

This retrospective study utilized a glomerular disease biopsy report registry linked to the Manitoba Centre for Health Policy (MCHP) from 2002-2021. Biopsies from adults (age 19-40) with type 1 and type 2 diabetes were included. Additional biopsy reports from adults 2022-23 and youth  $\leq 18$  years from 2002-23 were manually evaluated. Clinical data was extracted from MCHP (adults) and clinical charts (youth). Pathological features evaluated included primary diagnoses, diabetes-related changes, chronic structural damage, and immunofluorescence. Clinical covariates included sex, age, diabetes duration, hemoglobin A1c, (HbA1c), estimated glomerular filtration rate (eGFR), urine albumin:creatinine ratio (ACR). Descriptive statistics were performed.

**Results**

A total of 153 adult and 34 youth biopsies were included. Mean age at biopsy and mean age of diabetes diagnosis was  $32\pm 6$  and  $26\pm 8$  years for adults and  $15\pm 2$  and  $11\pm 3$  years for youth. Median diabetes duration was shorter in youth (2.8 (1.3-4.9) vs 5.0 (1.0-10.0) years,  $p=0.0004$ ) and adults had better glycemic control (A1c  $7.6\pm 2.3$  vs  $10.3\pm 2.8$ ,  $p<0.0001$ ). Adults had more albuminuria (median ACR 330.0 (172.3-591.5) vs 94.0 (34.9-204.8) mg/mmol,  $p<0.0001$ ) and lower eGFR (median 37 (14-79) vs 143 (127-167) ml/min/1.73m<sup>2</sup>,  $p<0.0001$ ). Adults had more diabetic nephropathy (43.8% vs 26.5%,  $p=0.01$ ) whereas youth had more non-diabetic diseases, including non-proliferative glomerulonephritis (29.4% vs 13.7%,  $p=0.05$ ).

**Conclusion**

There are differences in clinical status and biopsy findings between adults and youth with diabetes undergoing clinical kidney biopsies. Youth are more likely to have non-diabetic kidney diseases whereas adults have more diabetic nephropathy and chronic renal parenchymal scarring. Further studies needed to examine eGFR trajectories based on biopsy findings to better understand clinicopathologic implications.

**Do you have a table/figure to upload?**

Yes

## Authors

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	<b>Youth</b>	<b>Adults</b>	<b>P-value</b>
Any glomerular basement membrane thickening	32.4%	77.8%	0.001
Any mesangial expansion	44.1%	92.6%	0.0001
Any Kimmelstiel-Wilson lesions	0%	70.3%	< 0.0001
Any arteriolar hyalinosis	11.7%	96.3%	< 0.0001
Any global sclerosis	41.2%	80.4%	< 0.0001
Severe tubular interstitial scarring	5.9%	52.2%	< 0.0001
Any mesangial immune deposits	52.9%	30.7%	0.02
IgA+ staining	64.7%	32.7%	0.001
IgM+ staining	70.5%	37.9%	0.001
C3+ staining	14.7%	50.3%	0.0003

**Table 1.** Pathological features evaluated in youth and adult kidney biopsy reports.