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ORIGINAL ARTICLE

**Renal impairment is prevalent in pediatric NAFLD/MASLD and associated with disease severity**

[Marialena Mouzaki](https://onlinelibrary.wiley.com/authored-by/Mouzaki/Marialena), [Katherine P. Yates](https://onlinelibrary.wiley.com/authored-by/Yates/Katherine%2BP.), [Ana Catalina Arce-Clachar](https://onlinelibrary.wiley.com/authored-by/Arce%E2%80%90Clachar/Ana%2BCatalina), [Cindy Behling](https://onlinelibrary.wiley.com/authored-by/Behling/Cindy), [Niviann M. Blondet](https://onlinelibrary.wiley.com/authored-by/Blondet/Niviann%2BM.), [Mark H. Fishbein](https://onlinelibrary.wiley.com/authored-by/Fishbein/Mark%2BH.), [Francisco Flores](https://onlinelibrary.wiley.com/authored-by/Flores/Francisco), [Kathryn Harlow Adams](https://onlinelibrary.wiley.com/authored-by/Adams/Kathryn%2BHarlow), [Paula Hertel](https://onlinelibrary.wiley.com/authored-by/Hertel/Paula), [Ajay K. Jain](https://onlinelibrary.wiley.com/authored-by/Jain/Ajay%2BK.)[**… See all authors**](https://onlinelibrary.wiley.com/doi/abs/10.1002/jpn3.12272)

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**Abstract**

Objectives

Renal impairment is prevalent in adults with nonalcoholic fatty liver disease (NAFLD/metabolic dysfunction associated steatotic liver disease [MASLD]) and is associated with increased mortality. Pediatric data are limited. Our objective was to determine the prevalence of hyperfiltration or chronic kidney disease (CKD) in children with NAFLD/MASLD and determine links with liver disease severity.

Methods

Data from children who had previously participated in prospective, multicenter, pediatric studies by the Nonalcoholic Steatohepatitis Clinical Research Network (NASH-CRN) were collected. Renal function was determined using the calculated glomerular filtration rate (cGFR). Hyperfiltration was defined as cGFR > 135 mL/min/1.73m2, while CKD stage 2 or higher as cGFR < 90 mL/min/1.73 m2. Renal dysfunction progression was defined as transition from normal to hyperfiltration or to CKD stage ≥ 2, or change in CKD by ≥1 stage. Multinomial logistic regression models were used to determine the prevalence of CKD and independent associations between CKD and liver disease severity.

Results

The study included 1164 children (age 13 ± 3 years, 72% male, 71% Hispanic). The median cGFR was 121 mL/min/1.73 m2; 12% had CKD stage 2−5, while 27% had hyperfiltration. Hyperfiltration was independently associated with significant liver fibrosis (odds ratio: 1.45). Baseline renal function was not associated with progression in liver disease over a 2-year period (*n* = 145). Renal dysfunction worsened in 19% independently of other clinical risk factors. Progression of renal impairment was not associated with change in liver disease severity.

Conclusions

Renal impairment is prevalent in children with NAFLD/MASLD and hyperfiltration is independently associated with significant liver fibrosis. Almost 1/5 children have evidence of progression in renal dysfunction over 2 years, not associated with change in liver disease severity. Future assessments including additional renal impairment biomarkers are needed.