

# The Impact of the COVID-19 Pandemic on Access to Care for Pediatric Patients with Non-Alcoholic Fatty Liver Disease

**Rashmi Rege**<sup>1,2</sup>, Sarah Orkin<sup>2,3</sup>, Syeda Meryum<sup>2</sup>, Ana Catalina Arce-Clachar<sup>2,3</sup>, Kristin Bramlage<sup>2</sup>, Stavra Xanthakos<sup>2,3</sup>, Marialena Mouzaki<sup>2,3</sup>

<sup>1</sup>State University of New York Upstate, Norton College of Medicine

<sup>2</sup>Cincinnati Children's Hospital Medical Center, Department of Gastroenterology

<sup>3</sup>University of Cincinnati College of Medicine

**Introduction:** Management of pediatric non-alcoholic fatty liver disease (NAFLD) relies on lifestyle interventions. Studies have shown that frequent outpatient monitoring is correlated with better patient outcomes. Minority groups may be disproportionately affected by unequal access to care. The COVID-19 pandemic exacerbated the issue of accessing medical care and was also followed by a rise in obesity. This was mainly true for individuals from low-income neighborhoods, suggesting that unequal opportunities may have played a role. Thus, the objective of this study was to:

1. Determine the link between ethnicity and socioeconomic deprivation on outpatient clinic attendance among NAFLD patients.
2. Investigate whether the findings of Aim 1 are associated with liver disease outcomes.

We hypothesized that patients of Hispanic ethnicity or living in areas of increased deprivation had lower clinic attendance, and that the latter was associated with worse liver outcomes.

**Methods:** This was a retrospective, single center study examining access to care, defined as attendance at scheduled outpatient NAFLD clinics. Two timelines of interest were determined: the "acute" phase, defined as year 1 of the pandemic (April 2020 to March 2021), and the "maintenance" phase, defined as year 2 (April 2021 to March 2022). The data included sociodemographic factors, clinical/laboratory variables, and clinic attendance. The community deprivation index (CDI) was calculated with DeGAUSS software.

The outcome of interest for Aim 1 was the number of clinic cancellations/no-shows in the acute and maintenance phases of the pandemic. Clinic attendance was divided into quartiles ( $\leq 25\%$ , 26-50%, 51-75%,  $>75\%$  of appointments attended). The predictors were ethnicity and CDI (0-1, where 1=maximum deprivation). The outcome of interest for Aim 2 was the change in ALT during each phase with Aim 1 predictors.

**Results:** A total of  $n=211$  subjects (75% male, 39% Hispanic, age  $14 \pm 3.4$ ) were included in the acute phase and  $n=277$  in the maintenance phase (75% male, 40% Hispanic, age  $14 \pm 3.3$ ). Ethnicity and CDI were not associated with clinic attendance in either phase.

The acute phase data indicated a significant increase in mean BMI (1.7, 0.9, 1.9, 1.4 kg/m<sup>2</sup> in  $\leq 25\%$ , 26-50%, 51-75%,  $>75\%$  attendance groups, respectively), but differences between groups were not significant ( $p=0.62$ ). Significant, consistent changes in laboratory values over the acute year were seen only in those attending  $>75\%$  of clinic visits. However, the differences in laboratory changes between attendance groups were not significantly different.

The maintenance phase data showed that patients continued to have increases in BMI (0.3, 0.6, 0.4, 0.2 kg/m<sup>2</sup> in the  $\leq 25\%$ , 26-50%, 51-75%,  $>75\%$  groups, respectively). Their liver enzymes, however, improved overall without significant differences between attendance groups.

**Conclusion:** No association was found between the socioeconomic variables studied and the proportion of outpatient clinic visits within the two years of the pandemic. Concerningly, obesity severity increased.

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