

Social Determinants of Health Impact on Pediatric Type 1 Diabetes Outcomes

Early After Diagnosis

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Background

Diabetes technology, including continuous glucose monitoring (CGM) and insulin pumps, has improved glycemic control in youth with type 1 diabetes (T1D). However, disparities in technology uptake may exacerbate inequities in diabetes outcomes. We examined the association between social deprivation and diabetes technology use in the first-year post-diagnosis.

Methods

We analyzed 6,807 clinical records from 1,599 patients diagnosed with T1D before age 22 and seen at the Barbara Davis Center (7/2018–12/2022). Patients were stratified into quintiles based on the social deprivation index (SDI). Time-to-event analyses assessed technology adoption, while logistic regression models evaluated A1c trends.

Results

Technology adoption differed significantly across SDI quintiles ($p < 0.01$ for pumps; $p = 0.025$ for CGM), with higher deprivation linked to lower utilization. The most deprived patients (Q5) were 55% less likely to use CGM (HR = 0.45, $p < 0.001$) and 61% less likely to initiate pump therapy (HR = 0.39, $p < 0.001$) than the least deprived (Q1). Median time to CGM initiation was 1.2 months in Q1 vs. 3 months in Q5 ($p < 0.001$). While CGM use correlated with lower A1c across all SDI groups, disparities in glycemic control persisted.

Conclusion

Higher social deprivation was associated with lower diabetes technology adoption and poorer glycemic control. Despite its benefits, CGM alone does not eliminate disparities. Addressing structural and socioeconomic barriers is critical to ensuring equitable diabetes care. Future research will examine the impact of automated insulin delivery on these disparities.