

Effects of Social Determinants of Health on Clinical Outcomes in Pediatric Cystic Fibrosis Patients

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Background and Objective:

Advances in the treatment of cystic fibrosis (CF) with cystic fibrosis transmembrane regulator modulators have improved morbidity and mortality, however, clinical outcomes vary among genetically similar patients due to contributions of social determinants of health (SDOH). Pancreatic insufficiency, CF-related diabetes (CFRD), *Pseudomonas* infections, and lower BMI increase risk of severe lung disease, measured by forced expiratory volume in 1 second (FEV1). This project aims to identify socially vulnerable patients and evaluate the impact of SDOH on clinical outcomes.

Methods:

From January to July 2023, SDOH screeners were distributed to families of children with CF at Riley Hospital for Children, documenting transportation, housing, food insecurity, insurance, and medication costs. Clinical outcomes for each patient including FEV1% predicted, BMI/WFL percentile, CFRD, hospitalizations, respiratory infections with *Pseudomonas aeruginosa*, and pancreatic insufficiency within the past 12 months were recorded. Patients were categorized by SDOH vulnerability, and associations with poor clinical outcomes were analyzed using the Chi-squared test of independence.

Results:

A total of 193 screeners were analyzed: males represented 52.6% of the cohort, 2.60% identified as non-white race, and 3.65% reported Hispanic ethnicity. Overall, 51.8% screened positive for at least one SDOH (SDOH+) and 48.1% screened negative (SDOH-). The average FEV1% predicted decline among SDOH+ patients was 5.79% and 3.51% among SDOH- patients. SDOH+ patients were more likely to have at least a 5% decline in FEV1% predicted ($p=0.037$) and to be hospitalized due to exacerbations of CF lung disease at least once in the past 12 months ($p=0.030$). Although low BMI percentile, *Pseudomonas* infection, and CFRD were not significantly associated with SDOH, socially vulnerable patients demonstrated higher rates of these clinical outcomes.

Conclusion and Clinical Implications:

SDOH impact CF clinical outcomes. Screeners are effective in identifying socially vulnerable patients and serve as the first step in addressing unmet social needs.