Background:

Epstein-Barr virus (EBV) is a prevalent virus linked to lymphoproliferative diseases. Early EBV exposure may be a predisposing factor for EBV-positive lymphoproliferative disease. Our study aimed to analyze EBV seropositivity patterns among an urban oncologic pediatric population with a low socioeconomic status in an industrialized country.

Objective:

Our goal is to explore EBV-associated disease, hypothesizing that a lower socioeconomic population, primarily covered by Medicaid, would have a higher EBV seropositivity rate than the national average starring at a younger age.

Methods:

We conducted a retrospective chart review of patients treated at the St. Christopher's Hospital for Children Oncology Department in Philadelphia from 2018 through 2023, collecting demographics, viral laboratory data, and social work utilization details.

Results:

Our study included 74 patients, 10 of whom had private insurance and 64 had public insurance, with an average age of 8.5 years. The overall EBV seropositivity was 68.6%, aligning with published data of 66.5% overall EBV seroprevalence in pediatric patients. Among liquid oncology patients, 73.5% were seropositive; while 57.1% of solid oncology patients were seropositive (p=0.17). Of the patients that had no evidence of infection, 27% had private insurance; contrasting with 8.3% of private insurance among those who had evidence of past or current infection(p=0.04). Age-based analysis revealed an increased seropositivity trend, from 54.5% in 1-2 year-olds to 100% in patients over 18 years old, except for a deviation that did not fit this trend in the 12-14 year-olds group that had an EBV rate of 44.4%, which is 19.7% less than published data for this age group. Interestingly, this age group also had the highest percentage of patients with private insurance, at 44.4%. The higher the seropositivity rate was, the lower percentage of patients on private insurance (r=-0.79, p=0.03). Each other age group had a seropositivity averaging 14.4% higher than published data (p=0.58).

Conclusion:

Although not statistically significant due to a limited sample size, our patient population had higher rates of EBV seropositivity. Notably, one age group had a lower rate of seropositivity which revealed a significant association between seropositivity and insurance coverage. Further investigations focused on patients in low socioeconomic areas, especially covered by public insurance, are warranted to assess a possibly higher burden of lymphoproliferative disease.