



# THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND KNOWLEDGE OF TREATMENT HISTORY AND LATE EFFECTS AMONG ADOLESCENT AND YOUNG ADULT SURVIVORS OF CHILDHOOD CANCER



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## Introduction & Background

- Knowledge of treatment history and late effects among adolescent/young adult (AYA) survivors of childhood cancer is critical for engaging in follow-up care and optimal self-management.
- Knowledge of cardiac and reproductive late effects (including infertility) is particularly important for AYA survivors as these late effects often emerge in adulthood, are relatively common, and have relevance for their quality of life and long-term health.
- Knowledge may be related to socioeconomic status. One study with AYA survivors found an association between reduced patient knowledge regarding diagnosis and lower annual income (10,000 USD and 24,990 USD).
- We aimed to explore the relationship between socioeconomic status, particularly median neighborhood income, and knowledge related to treatment history and cardiac and reproductive late effects.
- We hypothesized that as median neighborhood income of participants increased, their knowledge of treatment history and late effects would also increase.

## Methods

- A cohort of 593 AYA survivors aged 16-25 across 3 sites (CHOP, CCHMC, CHLA) were recruited to complete baseline measures as part of a longitudinal, observational study (See Table 1)
- Patients reported whether or not they received four types treatments (chemotherapy, radiation, major surgery and transplant) and if they were at risk for cardiac and reproductive late effects.
- Knowledge was assessed by comparing patient responses to electronic health record review.
- Treatment history knowledge was scored on a scale of 0-4, with the highest value representing the greatest accuracy.
- Late effects knowledge was scored as either correct (1) or incorrect (0).
- Neighborhood median income and poverty data were extracted from the U.S. Bureau of the Census-2020 Census Summary at the Census Tract (CT) level.
- The federal definition for low-income area (i.e.,  $\leq 80\%$  statewide median income) was used to dichotomize neighborhood median income, and high poverty areas were determined using cut off from prior research in pediatric cancer ( $\geq 20\%$  poverty; Bona et al. 2016).
- Correlations and chi-square tests were used to test the relationships.

**Table 1. Participant Characteristics N=593**

Age M (SD)	19.73 (2.46)
Age at Diagnosis M (SD)	7.36 (4.90)
Years Off Treatment M (SD)	10.47 (4.60)
Race n (%)	
Non-Hispanic White	430 (72.5)
BIPOC*	187 (31.6)
Sex n (%)	
Male	308 (51.9)
Female	278 (46.9)

\*BIPOC: Black, Indigenous, People of Color

**Aim:** To investigate the relationship between socioeconomic status and patient knowledge of treatment history and cardiac and reproductive cancer late effects among AYA survivors of childhood cancer.

## Results

Figure 1: Census Tract Median Income Distribution

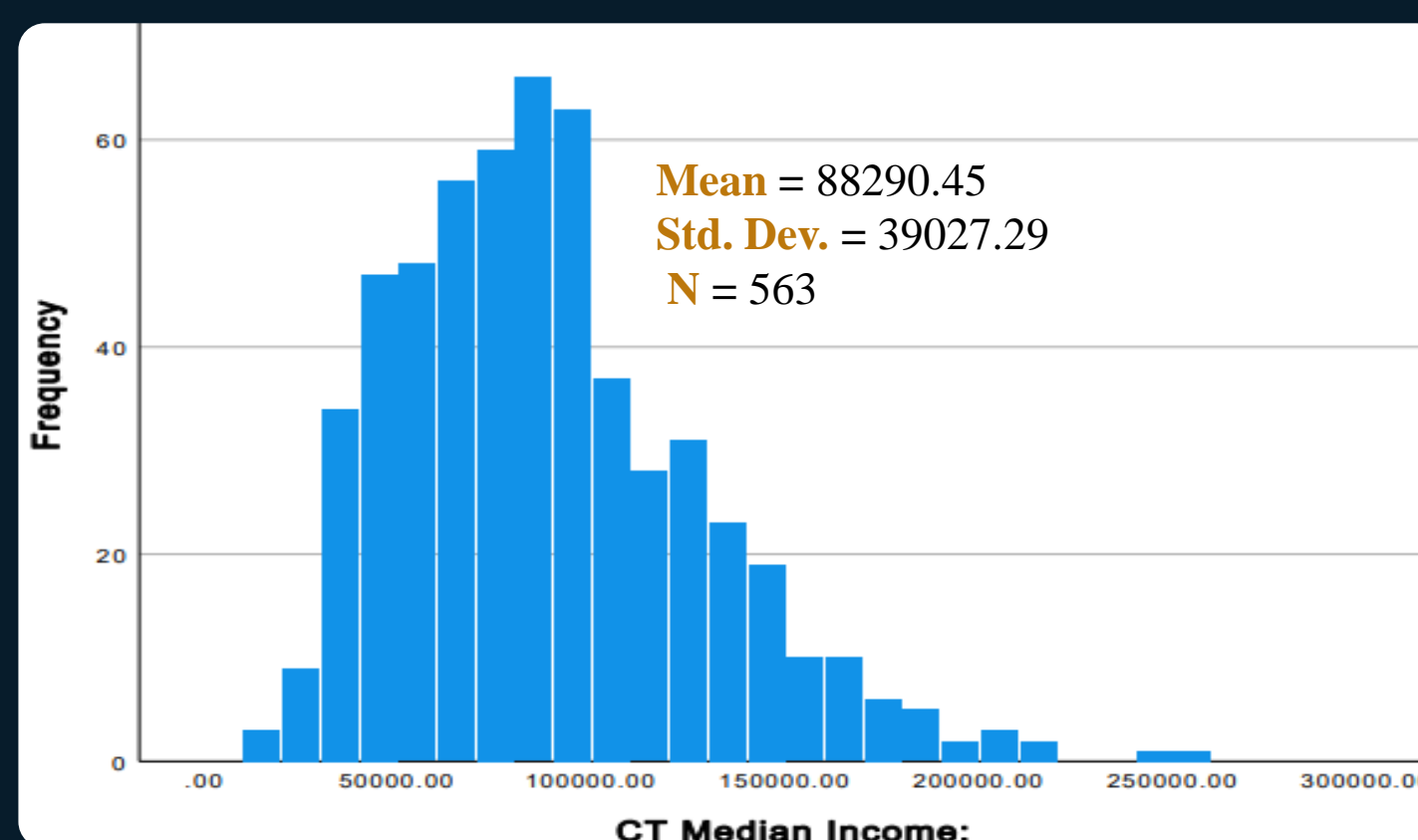


Figure 2: Census Tract % Below Poverty Income Distribution

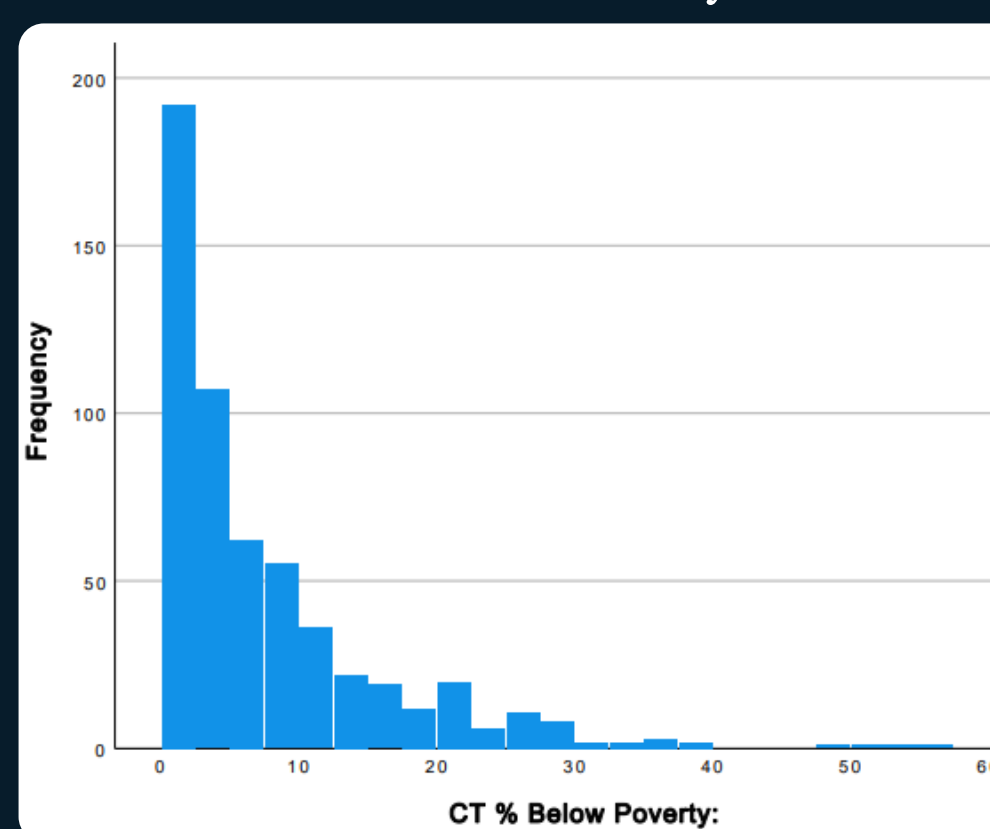


Table 2: Correlation Between Neighborhood income & Treatment History Knowledge

		CT Median Income	CT% Below Poverty
Total Treatment History Knowledge (0-4)	Pearson Correlation	.101	-.051
	Sig. (2-tailed)	.018	.235
	N	547	547

Table 3: Cardiac Late Effect Knowledge by Neighborhood Income Group

		Average/High Income	Low Income Area	Total
Cardiac Late Effects Knowledge	.00 Count	139	44	183
	Expected Count	144.4	38.6	183.0
	1.00 Count	171	39	210
	Expected Count	165.6	44.4	210.0

Table 3.1: Chi- Squared

	Value	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.758 <sup>a</sup>	.185

Table 4: Reproductive Late Effect Knowledge by Neighborhood Income Group

		Average/High Income	Low Income Area	Total
Reproductive Late Effects Knowledge	.00 Count	103	45	148
	Expected Count	113.2	34.8	148.0
	1.00 Count	154	34	188
	Expected Count	143.8	44.2	188.0

Table 4.1: Chi- Squared

	Value	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.989 <sup>a</sup>	.008

## Results (cont)

- There was a small positive correlation between neighborhood median income and treatment history knowledge (see Table 2).
- There was no association between neighborhood poverty and total treatment history knowledge.
- The mean difference between the total treatment history knowledge score for average/high income areas and the mean score for low-income areas was not statistically significant ( $t=.980, p=0.328$ )
- Using a Chi-Squared Test, the expected count and actual yield difference for the cardiac late effect knowledge was not statistically different between neighborhood income groups (see Table 3 and 3.1).
- The expected count and actual yield difference for reproductive late effect knowledge between AYA from low-income and average/high income neighborhood was significantly different (see Table 4 and 4.1).

## Conclusion/Discussion

- As hypothesized, median income was positively related to treatment knowledge.
- There were significant group differences between low and average/high income on reproductive late effects knowledge.
- However, there was no group difference between average/high and low poverty and cardiac late effects knowledge.
- Knowledge of treatment and late effects is likely multifactorial, with age, years of treatment, parental involvement, and other variables possibly contributing.
- The smaller sample size of high poverty participants likely decreased variability to detect more differences.
- More research is needed to understand the impact of knowledge on follow-up care engagement and potential related aspects of self-management.

## References

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