Association between household income and survival after resection of small bowel neuroendocrine neoplasms: a SEER-based analysis.

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Background

- **SB-NENs** are a group of mostly indolent malignancies in the **Small intestine**.[1,2] **Surgical resection** remains the mainstay of treatment for SB–NENs.[5] **Radical resection** for poorly differentiated and **local excision** for well differentiated.
- **SB-NENs** are the most common small bowel malignancy, at 37.4% in the United States.[3]As of 2021, the incidence of **SB-NENs** in the U.S. was estimated to be 1.4 cases per 100000.[4]
- We hypothesized that low household income is associated with **reduced survival** after resection of SB-NENs due to **limited access** to quality care and treatment resources in **the low-income group.**
- The present study aimed to assess the association between **household income**, as an important sociodemographic parameter, and **cancer-specific survival (CSS)** and **overall survival (OS)** in patients with surgically resected SB-NENs.

Methods

Design & Setting

- Retrospective cohort study using the US National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Database, 2006-2022.
- Four groups, low income (<$50,000), average income ($50,000-$74,999), above average income ($75,000-$119,999), and high income (>$120,000).; categorized according to the median household income in the United States in 2006-2022[6].

Population & Eligibility

- Included: 11,379 patients with SB-NENs who underwent surgical resection.
- Excluded: other small bowel cancer histological types, unknown disease stages, and patients who did not undergo surgery or did not have a surgery recorded were excluded.

Exposure Groups

- The main exposure was household income, and the main outcome was survival.

Primary & Secondary Outcomes

- Primary: 5-year CSS (from diagnosis to death due to cancer).
- Secondary: 5-year OS (from diagnosis to last contact or death)

Statistical Analysis

- Survival: Kaplan–Meier with log-rank tests; Cox regression for independent predictors of cancer specific survival.
- Statistical significance was defined as p<0.005 with a 95% confidence interval (CI).

Results

Cohort Description:

- A total of 11,379 patients (6.8% low income, 34.5% average income, 52.6% above-average income, and 6.8% high income)
- 51.6% were males with a median age of 63.1 years (SD: 12.67)
- Patient Characteristics: 80.1% were White, 63.1% were Married, 87.3% lived in metropolitan areas.
- Disease Characteristics: 44.4% had stage III disease, 51% of neoplasms were in the Ileum.
- Treatment Characteristics: 81.5% had Radical Resection, 10.6% received systemic therapy.

Primary outcome: Unadjusted mean 5-year CSS rate was significantly lower only in the low-income group with Stage III (91.1%, 91.1%, 94%, 95%, p=0.017).

Secondary Outcome: Unadjusted mean 5-year OS rate was significantly lower in the low-income group across all stages (I-IV) (76.4%, 77.3%, 80.8%, 84.8%, p<0.001).

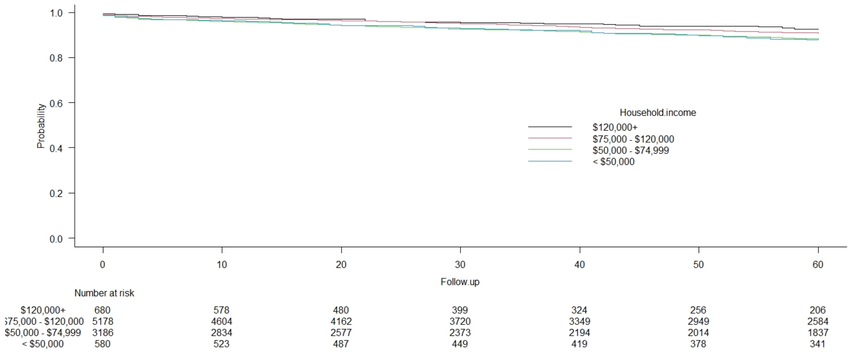
Multivariable Regression Analysis:

- Household Income was not independently associated with CSS (HR: 1.28; 95% CI: 0.81–2.03, p = 0.298).
- The independent predictors of reduced CSS were older age, divorced, single or widowed status, specific carcinoid and neuroendocrine carcinoma histology, and adjuvant systemic therapy.
- Local tumor excision and time from diagnosis to surgery were associated with an increased CSS.

Subgroup Analysis:

- Of 156 patients in the low-income group with neuroendocrine carcinoma, local excision was used in 54.3% of duodenal neuroendocrine carcinomas in this group.

Kaplan-Meier 5-year CSS for Entire Cohort



Conclusion

Key Findings:

- **Low-Income Patients:**
  - Had lower survival after SB-NEN resection than did high-income patients, however household income was **not independently associated** with survival.
  - Were associated with a **26% lower chance** of undergoing **radical resection** for SB-NENs and having a greater reliance on chemotherapy, **31% higher chance** of undergoing **local tumor excision**.
  - More often present with **neuroendocrine carcinoma** and duodenal cancers.
  - Lacked timely access to high-volume centers, which can provide **radical resection** procedures as they hold a higher risk of **perioperative complications**, and a longer hospital stay.
- **Clinical Significance**: These findings suggest that income may influence outcomes indirectly, highlighting the need for targeted interventions to address disparities in clinical and sociodemographic differences.
- **Limitations**: A retrospective SEER analysis; potential risk of selection bias, lack of data on comorbidities, BMI, specific treatment details, and insurance status.
- **Future directions**: Prospective cohort studies and clinical trials to quantify disparities in treatment access, and patient-reported quality of life, and assess the cost-effectiveness of targeted interventions

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