

Examining Financial Toxicity throughout Head and Neck Cancer Survivorship: A Longitudinal Study

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Background

- Financial Toxicity** is defined as the **objective** and **subjective** patient-level impact of the costs of cancer care.
- It can afflict individuals even those with health insurance - from **any socioeconomic background**.^{1,2}
- In a growing population of head and neck cancer (HNC) survivors who are younger and have fewer medical comorbidities, employed patients possess a strong desire to return to work post-treatment.^{3,4}
- Following treatment, up to **48% of HNC survivors reduced work**, among whom 33% ceased employment.⁵
- These challenges in resuming employment may lead to reduced earnings and employment-based health insurance options, **further exacerbating financial toxicity** and **influence treatment choices** and resources for medical care.
- Several large-scale studies have suggested a link between cancer-related financial strain and **decreased health-related quality of life (HRQOL)**.⁶⁻⁸
- For patients with advanced or potentially curable cancer, discussion of treatment options regarding length of life, quality of life, and financial burden is at the crux of **shared decision-making**.
- Little is known regarding financial toxicity throughout the HNC survivorship and treatment journey
- The purpose of our study is to prospectively and longitudinally **understand the development and evolution of financial toxicity in HNC survivors in order to aid in the development of financial toxicity screening tools and better implement targeted interventions at different stages of the survivorship journey**

Materials and Methods

- Prospective Longitudinal** Survey of treatment naïve adults with HNC
 - From 10/2019 to 12/2020
- Eligibility** Criteria
 - 18+ years of age
 - Able to speak, read, and comprehend English without assistance
 - New (+/- 30 days) biopsy-proven diagnosis of squamous cell carcinoma of any of the following sites:
 - Oral Cavity
 - Oropharynx
 - Larynx/Hypopharynx
 - Nasal Cavity/Sinuses
 - Nasopharynx
 - Unknown Primary
- Exclusion** Criterion
 - Current or past medical history of any other cancer diagnosis/treatment
- Three timepoints
 - Visit 1 – Diagnosis**
 - Date of Biopsy +/- 30 days
 - Visit 2 – Mid-Treatment**
 - 2-4.9 months post-diagnosis
 - Visit 3 – End of Treatment**
 - 5-7.9 months post-diagnosis
- Data Surveyed (non-exhaustive)
 - Demographic Data
 - Financial and Socioeconomic Data (eg, **Personal Income, Household Income**)
 - Subjective Financial Toxicity tools (**COST score** and **FDQ**)
 - Health-Related Quality of Life metrics (**University of Washington QOL tool**)
- Additional collected data on **HNC-related and unrelated medical costs** and **out-of-pocket expenses**

Results

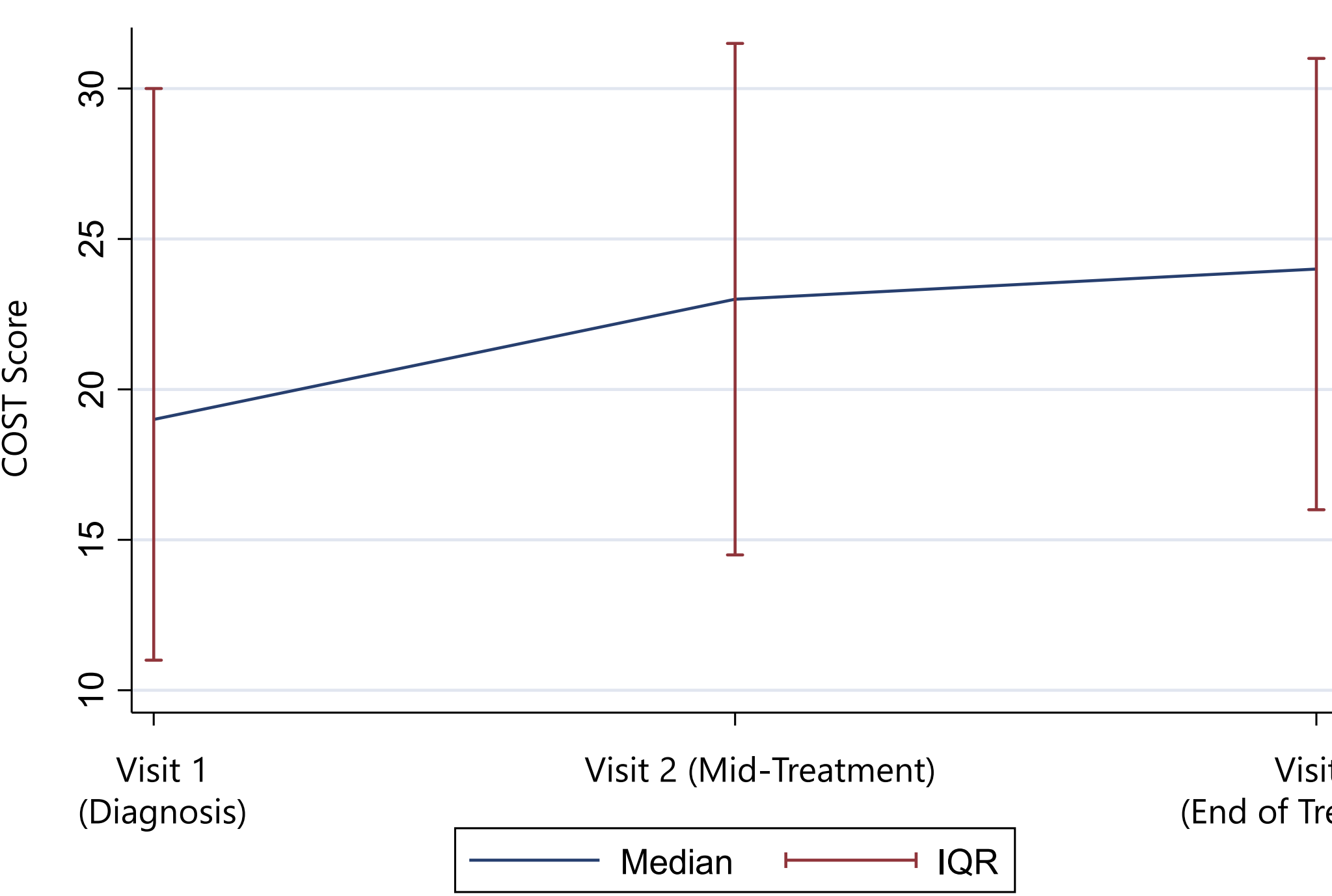


Figure 1. Financial Toxicity (per Comprehensive Score for financial Toxicity) by visit (n=33). Financial toxicity levels were higher at diagnosis [median (IQR) COST=18 (19)] than mid- or end of treatment. A significant improvement in financial toxicity was noted from visit 1 to visit 2 ($p=0.009$) with a subsequent plateau at end of treatment (median COST difference between visits 2 and 3: $p=0.19$). Financial toxicity at diagnosis in this subgroup of 33 survivors did not differ significantly from the initially enrolled cohort [n=62; median (IQR) COST=17 (15); $p=0.257$].

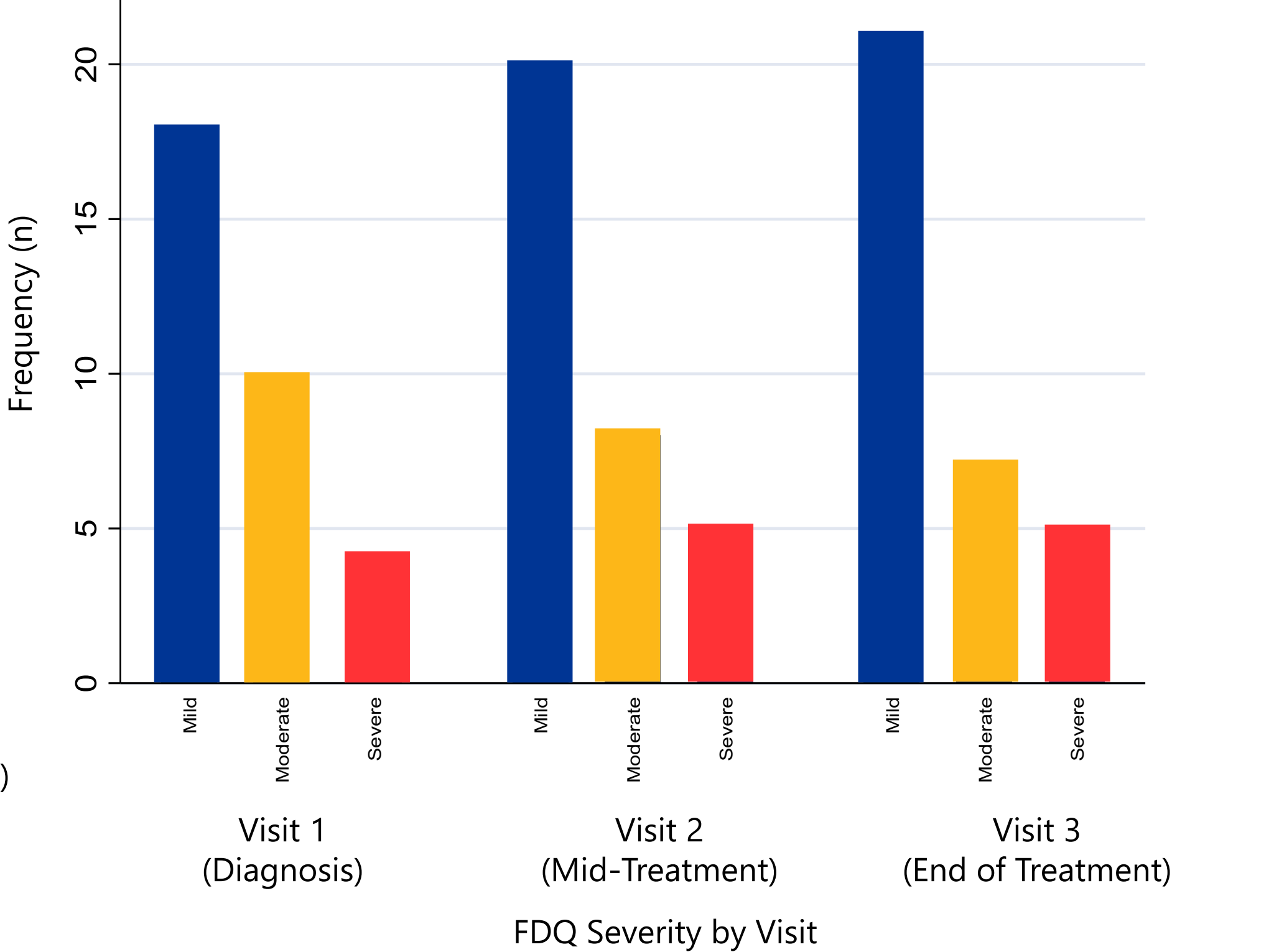


Figure 2. Financial Toxicity Severity (per Financial Distress Questionnaire) by visit (n=33). Nearly half of HNC survivors (14/33; 42%) indicated high financial toxicity levels at diagnosis prior to any therapeutic intervention. This number remained relatively stable over the duration of treatment with insignificant change: Mid-treatment (39%; $p=0.57$) and End of treatment (36%; $p=0.34$).

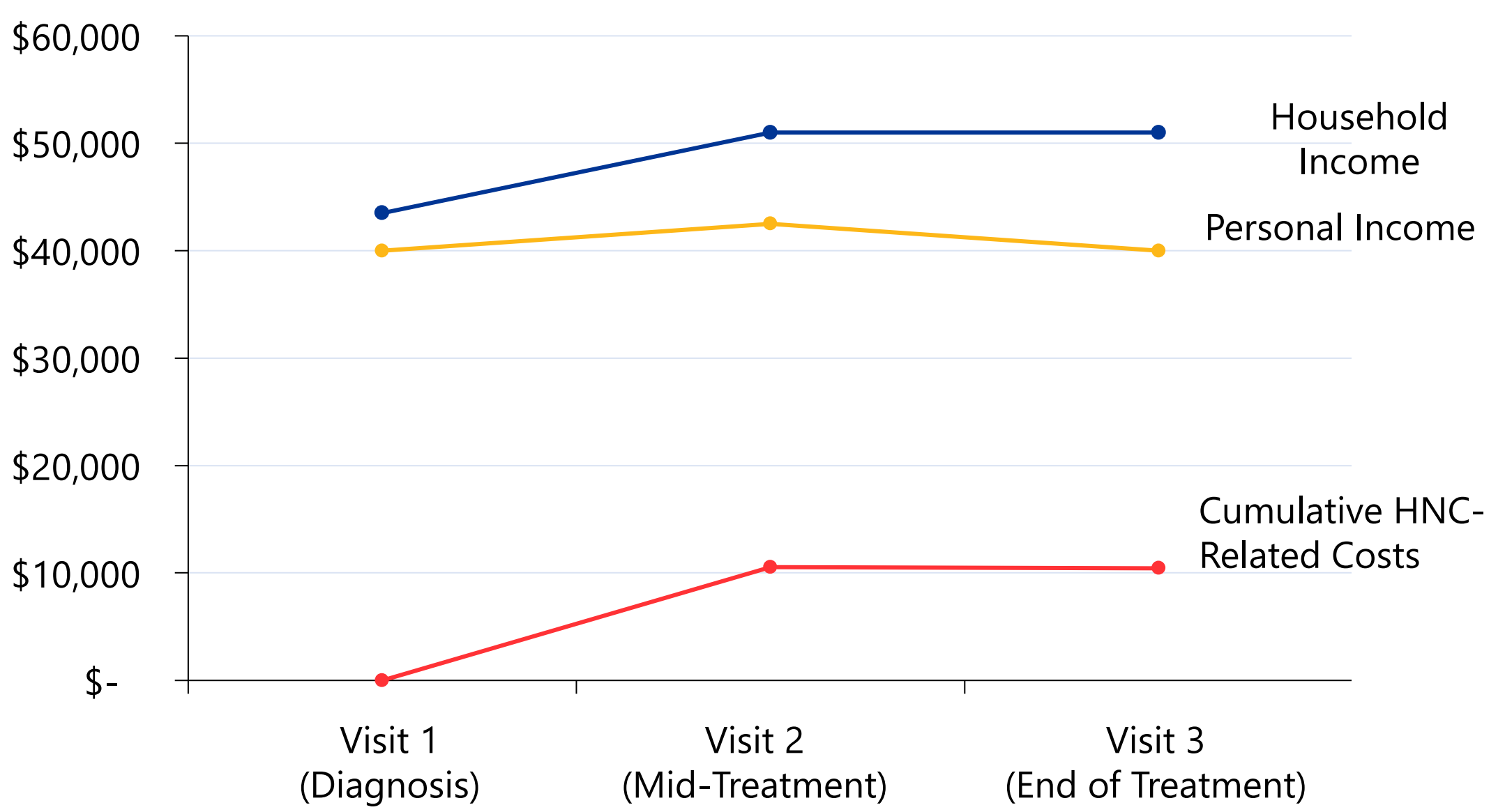


Figure 3. Median financial metrics by visit (n=33). Median (IQR) annual household and personal incomes at diagnosis were \$43,500 (\$34,250) and \$40,000 (\$35,500) respectively. These did not change significantly at end of treatment ($p=0.81$ and $p=0.77$, respectively). The cumulative sum of Head and Neck Cancer (HNC)-related medical costs increased from diagnosis to mid-treatment after which it plateaued at a median (IQR)= \$10,449 (\$1,132).

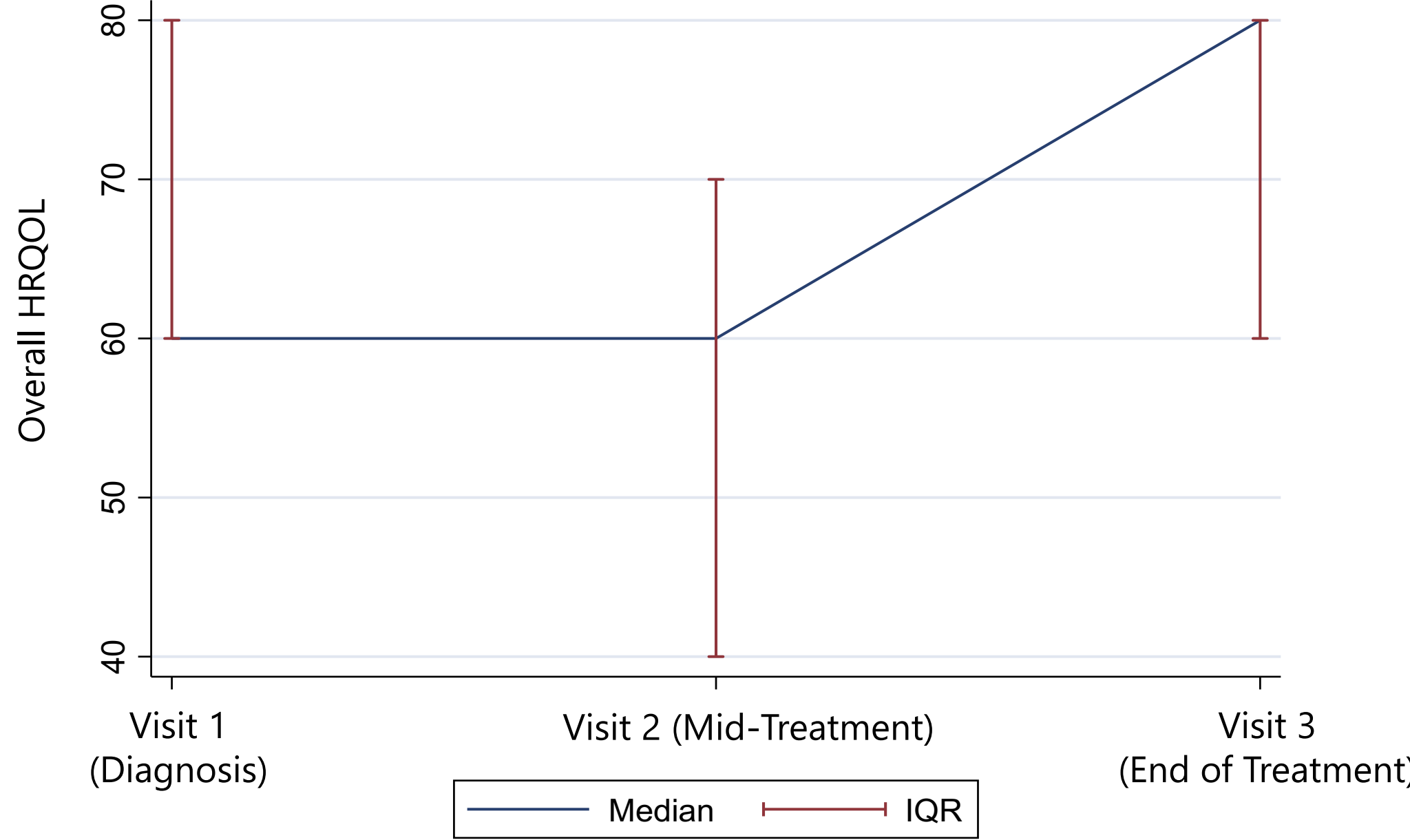


Figure 4. Overall Health-Related Quality of Life (HRQOL, per UWQOL tool) by visit (n=33). Survivors did not report an improvement in median overall HRQOL between the diagnosis and mid-treatment visits ($p=0.29$). There was a 20-point increase in median overall HRQOL towards end of treatment, although not statistically significant ($p=0.07$). Median physical HRQOL increased significantly from diagnosis to end of treatment (point difference=50; $p=0.001$) while social/emotional HRQOL remained relatively stable ($p=0.07$).

Conclusions

- Compared to studies examining financial toxicity across cancer types [median (range) COST=23 (0-44),⁹ **financial toxicity in HNC survivors appears to be worse as early as the time of diagnosis**.
- This financial toxicity remains relatively **stable throughout the duration of treatment** indicating that survivors who struggle with financial toxicity early are likely to continue to struggle with it throughout treatment.
- This unchanging financial toxicity is accompanied by **relatively stable household and personal incomes** in the setting of **plateauing HNC-related costs at the mid-treatment visit**.
- Overall HRQOL remains stable** throughout the duration of treatment with an expected early **improvement in physical QOL** prior to the establishment of long-term sequelae of treatment
- This further highlights **the critical need for an early financial toxicity screening tool upfront** prior to any therapeutic intervention
- Survivors who screen for high financial toxicity at diagnosis can then be supplied with **appropriate, established, integrated financial toxicity resources**, including **personalized financial navigation** and social services
- Longer follow-up is needed** to assess the **effect of long-term sequelae** of cancer and cancer treatment on QOL and the latter's subsequent effect on medical costs and financial toxicity.
- As we continue to analyze our data, **new relationships may appear** and a further **need for randomized controlled trials with targeted financial interventions may be required**.

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