

# The Effect of Socioeconomic Status on Gross Total Resection, Radiation Therapy and Overall Survival in Patients With Gliomas

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## Introduction

Socioeconomic status (SES) is associated with survival in many cancers but the effect of socioeconomic status on survival and access to care for patients with gliomas has not been studied.

## Methods

50,170 patients from the SEER Program at the National Cancer Institute database were included in this study. All patients were diagnosed with gliomas of the brain from 2003 till 2012. Patient SES was divided into tertiles and quintiles. Treatment options included radiation (yes/no), surgery (gross total resection (GTR)/other surgery/no surgery), and radiation with surgery (yes/no). Multivariable logistic regression and Cox proportional hazards model were used to analyze data with SAS v9.4. The results were adjusted for age at diagnosis, race, and sex. Kaplan Meier survival curves were constructed according to SES tertiles and quintiles.

## Results

Patients from a higher SES tertile were significantly more likely to receive surgery, radiation, GTR, and radiation with surgery (OR=1.086, 1.110, 1.098, 1.143 respectively, all  $p < 0.0001$ ). This correlation was also true when patients were divided into quintiles (OR=1.050, 1.068, 1.059, 1.086 respectively, all  $p < 0.0001$ ). Furthermore, the lowest SES tertiles (HR=1.248, 1.140) and the lowest SES quintiles (HR=1.294, 1.259, 1.187, 1.120) were associated with significantly shorter survival times (all  $p$  for trend  $< 0.0001$ ). Surgery, surgery with radiation therapy, and GTR were also found to be associated with improved overall survival in glioma patients (HR=0.649, 0.782, 0.753 respectively, all  $p < 0.0001$ ). When adjusted for treatment received (radiation, surgery, or radiation with surgery), the effect of SES on survival reduced (HR=1.204, 1.11 for tertiles; HR=1.239, 1.198, 1.153, 1.091 for quintiles), but was still significant (all  $p$  for trend  $< 0.0001$ ).

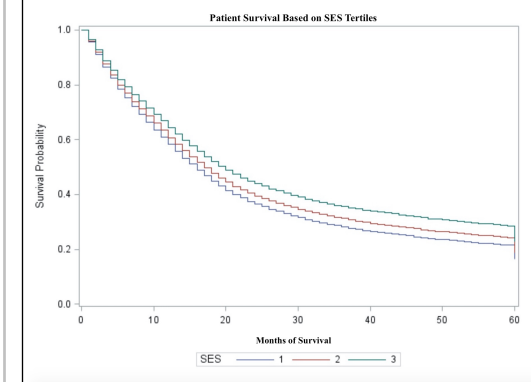
## Conclusions

The findings from this national study on patients with gliomas suggest an effect of SES on access to treatment, and survival in patients with gliomas. Further studies are required to understand reasons underlying these disparities and how they may be addressed.

## Learning Objectives

1. Nationally, socioeconomic status in patients diagnosed with gliomas is associated with differing likelihoods of receiving surgery, radiation therapy, surgery with radiation therapy, and gross total tumor resection
2. Surgery, surgery with radiation therapy, and gross total tumor resection are all associated with improved overall survival in patients with gliomas
3. Accordingly, reduced socioeconomic status is associated with reduced overall survival of patients with gliomas. Further studies are required to understand potential causes for these disparities and how they may be addressed.

**Figure 1.0**



**Figure 2.0**

