Socioeconomic disparities in head and neck cancer survival in Germany: A causal mediation analysis using population-based cancer registry data.

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Appendix 1: Treating Tumor Site as a confounder: Sensitivity Analysis.

Table 1. Cox proportional hazards model analyses.

Deprivation Quintile *(vs Reference Quintile 1)*	Hazard Ratio*	95% CI
Quintile 2	1.08	1.00-1.17
Quintile 3	1.11	1.03-1.20
Quintile 4	1.12	1.04-1.21
Quintile 5	1.24	1.16-1.33

*Adjusted for age, sex, year of diagnosis, and tumor site.

Abbreviations: CI=Confidence interval.

Table 2. Effect of Socioeconomic (SE) deprivation and mediators on odds of deaths at different times since head and neck diagnosis including tumor site as an additional confounder.

		Deprivation Level Odds Ratio [a] (95%CI) (vs reference Q1)			
		Q2	Q3	Q4	Q5
6 months	Direct Effect (SE Deprivation)[a]	1.17 (0.94-1.42)	1.14 (0.92-1.38)	1.32 (1.09-1.57)	1.37 (1.14-1.64)
	Mediator 1 (Medical Care)[b]	1.02 (0.99-1.04)	0.99 (0.97-1.00)	1.00 (0.97-1.04)	0.99 (0.98-1.00)
	M2 (Stage at Diagnosis)[c]	1.07 (0.98-1.19)	1.14 (1.04-1.26)	1.32 (1.22-1.45)	1.45 (1.33-1.58)
	M3 (Treatment)[d]	0.97 (0.95-0.98)	0.96 (0.95-0.98)	0.93 (0.91-0.95)	0.92 (0.90-0.94)
	Total Effect (TE)	**1.24 (0.99-1.53)**	**1.23 (1.00-1.51)**	**1.63 (1.35-1.95)**	**1.81 (1.51-2.16)**
1 year*	DE (SE Deprivation)	1.18 (0.99-1.39)	1.14 (0.96-1.34)	1.13 (0.96-1.32)	1.34 (1.17-1.56)
	M1 (Medical Care)	0.99 (0.97-1.01)	1.00 (0.99-1.02)	1.01 (0.98-1.04)	1.00 (0.98-1.01)
	M2 (Stage at Diagnosis)	0.98 (0.93-1.05)	0.99 (0.93-1.07)	1.08 (1.01-1.15)	1.08 (1.01-1.15)
	M3 (Treatment)	0.98 (0.97-0.99)	0.97 (0.96-0.99)	0.95 (0.94-0.97)	0.95 (0.94-0.96)
	TE	**1.12 (0.95-1.33)**	**1.10 (0.93-1.30)**	**1.17 (1.00-1.37)**	**1.37 (1.19-1.59)**
2 years*	DE (SE Deprivation)	1.21 (0.99-1.38)	1.25 (1.09-1.43)	1.14 (0.98-1.31)	1.30 (1.14-1.48)
	M1 (Medical Care)	0.99 (0.97-1.01)	1.01 (1.00-1.02)	1.01 (0.98-1.04)	1.00 (0.99-1.02)
	M2 (Stage at Diagnosis)	0.94 (0.88-0.99)	0.98 (0.92-1.05)	1.00 (0.95-1.07)	1.01 (0.95-1.05)
	M3 (Treatment)	0.98 (0.98-0.99)	0.97 (0.95-0.98)	0.97 (0.96-0.98)	0.96 (0.95-0.97)
	TE	**1.11 (0.95-1.27)**	**1.20 (1.04-1.37)**	**1.11 (0.96-1.28)**	**1.27 (1.10-1.43)**
5 years*	DE (SE Deprivation)	1.00 (0.85-1.17)	1.14 (0.98-1.33)	1.09 (0.94-1.26)	1.33 (1.15-1.51)
	M1 (Medical Care)	1.00 (0.97-1.02)	0.98 (0.96-1.00)	1.02 (0.99-1.05)	1.00 (0.98-1.01)
	M2 (Stage at Diagnosis)	0.97 (0.89-1.03)	0.96 (0.87-1.04)	0.96 (0.90-1.04)	0.96 (0.91-1.05)
	M3 (Treatment)	1.00 (0.99-1.01)	1.01 (1.00-1.03)	0.98 (0.97-0.99)	0.99 (0.98-1.00)
	TE	**0.97 (0.81-1.12)**	**1.09 (0.92-1.27)**	**1.05 (0.90-1.23)**	**1.26 (1.11-1.47)**

[a] Adjusted for age, sex, and year of diagnosis and tumor site.

[b] The natural direct effect odds ratio of exposure to socioeconomic deprivation levels in different quintiles on odds of death through neither medical care, stage at diagnosis, or treatment.

[c] The natural indirect effect odds ratio mediated by exposure induced changes in medical care.

[d] The partial indirect effect odds ratio mediated by exposure induced changes in stage at diagnosis.

[e] The partial indirect effect odds ratio mediated by exposure induced changes in treatment received.

* Conditional to surviving previous time point. Abbreviations: CI= Confidence interval, Q= Quintile. SE= Socioeconomic deprivation