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M.Sc. (bzw. Dr. sc.hum.)

**Determining the contribution of educational inequalities as risk factors for laryngeal cancer and analysing survival times including occupational, lifestyle and clinical factors.**

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The overall aim of this thesis was to investigate the role of lifestyle and environmental risk factors on laryngeal cancer risk and overall mortality based on a German patient cohort.

The case-control study showed that the association between lower education and laryngeal cancer is mainly explained by smoking, alcohol consumption and occupation, where occupational exposures play an important role. These outcomes were obtained with the use of various job-related indices easily linkable via the job titles collected in the questionnaire. The most promising aspect to explain educational inequalities is to separate specific aspects of the index by the authors' so called environmental pollution, i.e. exposure to smoke, dust, gases and vapors which we summarized as the carcinogenic agent index CAI. This CAI showed the highest OR among all occupational indices and the highest decrease in the OR of the educational variable.

We applied a new decomposition method for logit models proposed by Karlson et al. to calculate the percentage reduction in ORs of education across nested models. With this approach, we estimated the degree to which the association between years of education and laryngeal cancer is mediated by the stepwise added covariates. Smoking and alcohol consumption alone explain one quarter of the inequalities attributed to the lowest educational level. Including various job-related indices reflecting different occupational burdens already mentioned, another quarter of the association is explained by occupational exposures. CAI explains around one quarter (lifetime job history) and one fifth (longest job) of the remaining inequality after adjustment for smoking and alcohol consumption. Thus, occupational and lifestyle factors together contribute to around half (both lifetime job history and longest job) of the observed educational inequality.

The survival analysis showed that besides the already known clinical prognostic factors, as therapy, tumor stage, comorbidities, smoking and alcohol intake are influencing significantly the mortality rate. Occupational exposures, summarized in the CAI, also increased the mortality risk. However, our sample size might be too small to show a significant higher hazard of dying. Although most of the patients in our

cohort were diagnosed at an early stage, 63.5% died. Second primary tumors and cardiovascular disease were the major death causes, showing a relation with a substantial use of tobacco and alcohol.