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headandneck 5000

**Long term quality of life in people with head and neck cancer – the Big Data For Quality Of Life (BD4QoL) historical study**

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**Summary**

The predictors and determinants of long-term quality of life in people with head and neck cancer are not well described. Our analyses will use data collected in head and neck 5000 to identify modifiable determinants of long-term quality of life in people with head and neck cancer. Methods - We will use a modelling approach that will agnostically identify variables, interactions and non-linear effects to predict change in quality of life. State-of-the-art statistics and machine learning techniques will be applied to these datasets to predict/classify/stratify quality of life deterioration. Several approaches will be studied to create the most competitive predictive model: penalized regression such as Lasso, Deep Learning based models for sequence modelling like Long Short-Term Networks (LSTM) and algorithms for time-series analysis like the autoregressive integrated moving average models (ARIMA). LSTMs have been widely used to model sequences. Time series analysis using ARIMA is a classical approach. We will combine it with regression, as a multiple set of covariates, some longitudinally measured, some not, are available. We will store and analyse the data using the Service for sensitive data (TSD) at the University of Oslo, which is a platform for secure collection, storage and analysis of sensitive data. These analyses are a component of a larger EU funded project. As part of this project, we will be carrying out similar analyses on data from Milan and Mainz to extend the sample size and where possible to replicate findings and proposed models.

Keywords

Head and neck cancer, quality of life, artificial intelligence, machine learning