MISCLASSIFICATION IN ORAL HEALTH STUDIES

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In oral health studies dental examiners are involved who assess the oral health of individuals. Inevitably this often implies that the true dental status is subject to misclassification. Here, we will focus on misclassifying caries experience. This is a relevant issue as in a recent oral health study it was observed that misclassification rates could go up to 30%. While in the epidemiological literature a variety of approaches have been suggested to correct for misclassification, they do not seem to have penetrated in the dental area. Indeed, the approaches in the dental literature are quite specific to the dental problem. Further, to solve the interesting research questions in caries research one needs to take into account the complexity of dental data (clustering, interval-censoring, etc.). Unfortunately, the classical methods from the epidemiological literature cannot handle such complex models. Hence we will focus on approaches that can indeed handle correction for misclassification in complex settings.

A recently proposed method ($K\ddot{u}$ chenhoff et al., 2005), the Misclassification Simulation and Extrapolation (MC-SIMEX) method, is discussed here in more detail. This method has been adapted from the case of additive continuous measurement error and handles correction for misclassification in complex regression models, including the case of a misclassified outcome and covariate in hierarchical multinomial regression models. We will focus on the case where the misclassification probabilities are estimated from a validation study. The method will be exemplified on the Signal Tandmobiel Study, which is an oral health longitudinal study conducted on children from Flanders (Belgium).