ASSESSING POPULATIONS CHOICE FOR SOCIAL NETWORK SIZE ESTIMATION IN SCALE-UP METHODOLOGY

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Foreign body injury which takes place in the upper aero-digestive ways is a rare but not negligible event occurring in children. Often the small object swallowed is passed naturally with no adverse effects and then, since available data come from official discharge records and death certificates, self-resolved injuries are lost at observation leading to under-estimate the overall injury rate. Given the importance to get a reasonable estimate of the non hospitalized part of it the scale-up method, which is based on the concept of social network, has been proposed to this aim. The goal of this study is to introduce a new hierarchical model in a fully Bayesian fashion which is naturally fitted via Markov chain Monte Carlo methods and allows a convenient representation of vague prior knowledge. It allows for making inference on the social network size and provides a tool to assess for the choice of subpopulations which hold the scale-up method assumption that the mean number of people known in subpopulations are linearly proportional to the size of the super-population they belong to. We apply the method to the estimation of the number of foreign body injury involving children which led to a hospitalization in a North West Italian region in order to assess the reliability of the results through a direct comparison to the scale-up method estimator.