Bayesian Semiparametric Geoadditive Modelling of Underweight Malnutrition of Children under 5 Years in Ethiopia

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Abstract : Objectives:Early childhood malnutrition can have long-term and irreversible effects on a child's health and development. This study uses the Bayesian method with spatial variation to investigate the flexible trends of metrical covariates and to identify communities at high risk of injury. Methods: Cross-sectional data on underweight are collected from the 2016 Ethiopian Demographic and Health Survey (EDHS). The Bayesian geo-additive model is performed. Appropriate prior distributions were provided for scall parameters in the models, and the inference is entirely Bayesian, using Monte Carlo Markov chain (MCMC) stimulation. Results: The results show that metrical covariates like child age, maternal body mass index (BMI), and maternal age affect a child's underweight non-linearly. Lower and higher maternal BMI seem to have a significant impact on the child's high underweight. There was also a significant spatial heterogeneity, and based on IDW interpolation of predictive values, the western, central, and eastern parts of the country are hotspot areas. Conclusion: Socio-demographic and community- based programs development should be considered compressively in Ethiopian policy to combat childhood underweight malnutrition.