ABSTRACT

Background: Statistical data at a lower level of disaggregation are almost always not available due to several reasons like the sampling design of nationwide survey is designed to generate reliable estimates at the national level and sometimes at the regional level but seldom at a level lower than what had been mentioned and because of budget and time constraints. There has always been a clamor by the nutrition community to provide smaller area/domain estimates in order to have an efficient and effective nutrition intervention programs. This is also the request of some local government units whose interest is the eradication of malnutrition in their respective localities. Thus this study was conceptualized and conducted. Objective: This paper aims to provide an empirical basis for an indirect method of estimation of the provincial prevalence of underweight among 6-10 year-old children in the Philippines. Specifically, (1) to provide a method that may be used for estimating the provincial prevalence of underweight children aged 6-10 years; (2) to assess the reliability of the estimates; and (3) to compare which estimation technique yields a better set of estimates. Methods: Three estimation techniques were used: the direct or model-based, the regression-synthetic and the Estimated Best Linear Unbiased Estimator (EBLUP) technique. Direct estimates of the prevalence of underweight at the provincial level were generated using the 2003 National Nutrition Survey. Regression-synthetic estimates and EBLUP estimates were derived using data from the direct estimates coupled with the use of data from the 2000 Census of Population and Housing (CPH) and some administrative-based data from the Department of Health and Department of Education. Measures of accuracy, precision and reliability, such standard error (SE), mean square error (MSE) and coefficient of variation (CV) of these direct and indirect estimates were also computed. These measures were used to compare the direct estimates and those obtained using the indirect method or what is usually referred to as small area estimation. The smaller the SE, MSE, and CV, the more precise, accurate and reliable the estimates are. Results: The direct method generated only 7.14% reliable estimates of prevalence of underweight children. It was observed that such unreliable estimates are mainly due to small sample size of observations obtained at the provincial level. An indirect estimation method, specifically, the regression-synthetic and empirical best linear unbiased predictor (EBLUP) procedure was employed to circumvent the problem of unreliable provincial estimates. The distribution of coefficients of variation of the estimates derived from the three estimators showed that the set of estimates from the regression-synthetic estimator is the most reliable. It shows that about 36% are falling within the 0-10% range of the coefficients while the direct and EBLUP estimator produced the same percentage (7%) of reliable estimates. Conclusion: Results showed that by employing the synthetic-regression technique, more reliable provincial estimates for the proportions of underweight 6-10 year-old children can be obtained and therefore, considered
as the “best” estimator. **Recommendation:** Further study on the improvement of the statistical model should be done in order to generate a much better set of estimates and to employ the small area estimation techniques at a much lower level of disaggregation such as at the municipal and barangay level. In addition, more efforts should be exerted in gathering quality administrative-based data that are related to the nutritional status.