Spiegel and colleagues 1 analysed 125 surveys and assessments often fail to produce useable results. In Ethiopia, for example, resources in regions of the world where both are scarce—yet, Nutrition surveys absorb significant human and financial savings.3

Deitchler and co-workers4 used the principles of Lot Quality Assurance Sampling (LQAS) to develop alternative survey designs to assess the prevalence of Global Acute Malnutrition in a drought-affected region of Ethiopia. Specifically, they experimented with a survey that sampled six children in each of 33 clusters (the ‘33 × 6’ design); another that sampled three children in each of 67 clusters (the ‘67 × 3’ design), and a third ‘sequential’ design that was planned to incorporate up to three children in each of 67 clusters, but could be suspended as soon as the accumulated information exceeded a pre-determined benchmark. All three designs were compared with a standard

References

Commentary: Learning to Love Lot Quality Assurance Sampling
Saul Morris

Nutrition surveys absorb significant human and financial resources in regions of the world where both are scarce—yet, often fail to produce useable results. In Ethiopia, for example, Spiegel and colleagues1 analysed 125 surveys and assessments conducted in 1999 and 2000, and found that of the 67 surveys that set out to use standard methods,2 just six could be considered valid and precise. Forty-two other surveys intentionally included less than the 900 children expected in the conventional 30 × 30 (30 children in each of 30 ‘clusters’) sample design. It is likely that the cost, in both time and money, of fielding the standard design is a major factor leading implementers to compromise on sample size. Therefore, alternative designs that produce policy relevant information at a lower cost are highly desirable. Three such designs are evaluated in this issue, and are found to offer significant savings.3

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30 x 30 survey design. Strikingly, the authors show that their 33 x 6 and 67 x 3 designs involved hardly any loss of precision when analysed using standard cluster survey techniques and compared with the conventional 30 x 30 design across a range of indicators. This finding has nothing at all to do with the specifics of LQAS, but rather suggests that, because of intra-cluster correlation, the conventional 30 x 30 design is highly inefficient in this setting. The investigators then go on to show that the samples can be validly analysed using LQAS methods to classify the whole area as high or low priority for intervention, with acceptable probabilities of misclassification that do not differ between the two sample designs assessed (33 x 6 and 67 x 3). They also find that, using the 67 x 3 design, valid judgements could have been made even before all the data were collected: in fact, after cluster 38, the prevalence could have been determined to be <15%, again with acceptable probabilities of misclassification, further reducing the overall time required to collect the data.

LQAS is not a new technique: over 800 surveys were conducted between January 1984 and December 2004, with applications including the small-area surveillance of leprosy, filariasis, schistosomiasis and trachoma, amongst other diseases. It differs from more familiar sampling approaches in that its objective is to simply permit classification of the primary sampling units (or 'lots') into mutually exclusive high- and low-risk groups, based on pre-determined thresholds and tolerances of misclassification. This orientation makes it ideal for use by health system managers who need to identify pockets of high prevalence of disease or sub-standard service provision. It offers significant sample size savings over traditional surveys methods when there is space between the threshold that defines low risk and the second threshold that defines high risk and the second threshold that is set at 60%. Combined with the chosen tolerance of misclassification, this resulted in a required sample size of just 13 children per lot. The study reported in this volume shows that using clustered sampling within each lot—based on 'spin-the-bottle' starting points and progression from one house to its nearest neighbour—is an acceptable alternative to the simple random sample usually prescribed, greatly increasing the user-friendliness of the method. The major weakness of the study was that the samples compared with each other were not completely independent, as they ideally should have been.

None declared.

References