

Case Report

The Ten Beads method: a novel way to collect quantitative data in rural Uganda

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Significance for public health

The question of how well scaled survey questions work when employed in studies targeting semi- or low-literate communities has been widely debated in the public health and social research fields, with scholars arguing that language and cultural diversity may hamper accurate assessments. Failure of illiterate respondents to comprehend or interpret the quantitative scales may lead to unreliable results due to difficulty in interpreting the scales. The authors share observations and experiences using locally adapted methods to collect survey data requiring illiterate respondents to quantify their responses using a quantitative scale. This paper describes a novel survey technique of using ten local beads to collect quantitative data in surveys involving rural communities of Karamoja, North Eastern Uganda, where approximately 80% of population is unable to read or write.

Abstract

This paper illustrates how locally appropriate methods can be used to collect quantitative data from illiterate respondents. This method uses local beads to represent quantities, which is a novel yet potentially valuable methodological improvement over standard Western survey methods.

Introduction

Literacy across Sub-Saharan Africa is low, with approximately 63% of adult women and men considered literate.¹ In Uganda, only approximately 66.8% and 82.4% of women and men aged 15 years and above, respectively, are considered literate.² Given these rates, most household surveys in an African setting, such as Uganda, are likely to include illiterate respondents.

Against this backdrop, there is a debate within the public health and social research fields as to whether population-based studies that use standard Western questionnaire design and focus on illiterate communities can collect data that are reliable and valid given the challenges of language and ethnic diversity.^{3,4} Public health and social scientists agree that data validity and reliability can be compromised unless great care is taken in adjusting survey methods to overcome these difficulties.⁵ However, little is known about how traditional approaches can be used to collect valid and objective data in communities where literacy rates are low. This paper outlines the experience of the authors in conducting household nutrition surveys in Karamoja,

Northeastern Uganda, where an estimated 90% of the women can neither read nor write. Karamoja, home to an estimated 1.1 million people, is a traditionally pastoralist ethnic community and is the poorest region in Uganda with global acute malnutrition levels above the emergency threshold of 10%.^{6,7}

As part of nutritional surveillance activities in this region, most initiatives to monitor nutrition status have had to rely on bi-annual community nutrition surveys. The respondents to household surveys are largely women, as the majority of men are engaged in cattle-dominated farming and other activities, while women remain at home to do household chores. The nutrition surveys require respondents to quantify data related to household characteristics, such as poverty, food consumption or wealth ranking.

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We devised a method of using local beads to help women estimate characteristics within their households, such as household produce, expenditure or food consumption. Our research team worked with the local population to identify the type of local beads to use, identifying those that were appropriate and culturally accepted. The ten local beads can take the form of bean seeds, stones or beads used by local artisans, but the team uses only one form of beads throughout the survey to ensure consistency.

As one example, field teams asked respondents to think about their annual household income and how that income was spent. Then field teams asked respondents to use the beads to create piles that represented expenditures.

In response to a particular question, food purchases constituted the largest proportion of household expenditure (Figure 1).⁸ In fact, approximately 60% of the expenditure of households in Moroto and Nakapiripirit districts was spent on food.

Discussion

The Ten Beads method has been used with survey teams recruited from within the study setting who know the local language and culture of the community, and yet does not require highly experienced interviewers.⁹ Our research team has repeatedly found the use of ten local beads to be an effective survey method to estimate quantities with minimal bias.

The same approach has been useful in measuring responses on a

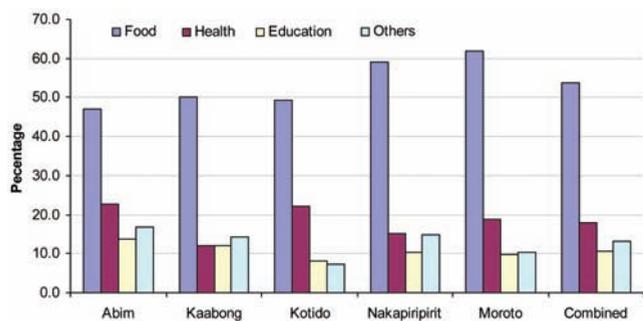


Figure 1. Proportion of household expenditure on food, health, education and others.

unidirectional Likert scale, which requires respondents to rate the extent they agree with a multi-item scale. Using the numbers 1-5 to rate respondents' agreement with the scaled items did not make sense to them. However, we found that women could readily create piles of beads to indicate how strongly they felt about things, indicating that the use of local Karamojong beads was a feasible approach. In this case, the field researcher can then easily convert the pile of beads into the equivalent of a 5-point Likert scale or other scale range. For example, on a 5-point Likert scale, two beads would equal a score of 1 while an odd number of beads would be treated as a half step between the standard scores. Alternatively, researchers could use only five beads if avoiding half steps was critical.

Conclusions

Our approach is consistent with the views of Mingers who maintains that research results will be richer and more reliable if different survey techniques, preferably from different paradigms, are routinely combined.¹⁰ This bead technique provides an example of how locally-adapted social research methods might be useful when illiterate respondents are asked to quantify data related to household characteristics, poverty, and wealth ranking or individual perceptions about certain quantities of a given variable. While further research is needed to provide validation of this method, we believe it can be useful in community or household surveys with non- or low-literate participants.

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