Mothers screening for malnutrition by MUAC is non-inferior to community health workers: results from a large-scale pragmatic trial in rural Niger

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Introduction

Community health workers (CHWs) commonly screen for acute malnutrition in the community by assessing mid-upper arm circumference (MUAC) on children aged 6-59 months. MUAC is a simple screening tool that has been shown to be a better predictor of mortality in acutely malnourished children than other practicable anthropometric indicators. Empowering mothers by training them to screen for malnutrition by MUAC and checking for oedema has been shown to be a promising approach. This study compared, under programme conditions, mothers and CHWs in screening for severe acute malnutrition (SAM) with colour-coded MUAC tapes.

Methods

This pragmatic interventional, non-randomised efficacy study took place in two health zones of Niger’s Mirriah District from May 2013 to April 2014. Mothers in Dogo (mothers zone) were trained to screen children in their household, and CHWs in Takieta (CHWs zone) were trained to screen children in the community for malnutrition by MUAC colour-coded class and to check for oedema. We conducted exhaustive coverage surveys quarterly, and relevant data were collected routinely in the health and nutrition programme. We did an efficacy and cost analysis of each screening strategy.

Ethics

The National Consultative Ethics Committee of Niger’s Ministry of Public Health approved the study protocol.

Results

12,893 mothers were trained in the mothers zone and 36 CHWs in the CHWs zone; point coverage (proportion of children with MUAC <115 mm or oedema who were effectively supported) was similar in both zones at the end of the study (35% [26/74] mothers zone vs 32% [11/34] CHWs zone; p=0.7772). The rate of MUAC agreement (compared with health centre agents) was higher in the mothers zone (75.4% [721/956] vs 40.1% [221/551]; p<0.0001) and cases were detected earlier, with median MUAC at admission for those enrolled by MUAC <115 mm estimated to be 1.56 mm (95%CI 0.65-1.87) higher using a smoothed bootstrap procedure. Children in the mothers zone were much less likely to need inpatient care, both at admission and during treatment, with the most pronounced difference at admission for those enrolled by MUAC <115 mm (0.7% [4/569] vs 7.8%
risk ratio 0.09 [95%CI 0.03-0.25]; p<0.0001). Training of mothers required higher up-front costs, but overall costs were much lower ($8,600 vs $21,980 USD).

**Conclusion**

Mothers were not inferior to CHWs in screening for malnutrition at a substantially lower cost. Children in the mothers zone were admitted at an earlier stage of SAM and needed fewer hospital admissions. Making mothers the focal point of screening strategies in this way should be included in malnutrition treatment programmes globally.

**Conflicts of interest**

None declared.