The nutritional status of children living in institutionalized care with control charts and funnel plots for program monitoring.

Context and Objectives


This retrospective analysis aimed to describe the nutrition-related epidemiology of children living within institutionalized care and explore the use of control charts and funnel plots for program monitoring.

Methods

Records from 2,926 children, 0-18 years old in 6 countries were analyzed.

Data collected included information on age, sex, anthropometry, disability status and hemoglobin. Shewhart control charts and funnel plots were used to explore inter-site and over-time variations in nutritional status.

Results

Baseline screening found:

- Disabilities: 739 (25.5%)
- Low birth weight: 514 (57.5%)
- Prematurity: 294 (42.2%)
- Anemia: 717 (28.8%)
- Wasting: 212 (12.8%)
- Stunting: 1048 (34.1%)
- Underweight: 788 (31.8%)
- Overweight or obese: 135 (12%)  
- Small head circumference: 339 (37.3%)
- Children with disabilities had higher prevalence of malnutrition compared to counterparts without disabilities. All children had higher malnutrition when compared to global prevalence.
- There was inter-site variation.
- Funnel plots show sites with malnutrition prevalence outside expected limits for this specific population taking into consideration natural variation. Control charts highlight changes in site mean z-scores over time in relation to population control limits.

Conclusions

- Malnutrition is prevalent among children living in institutional-based care, including stunting, underweight, anemia and wasting.
- Underlying risk factors are more common than global prevalences: low birth weight, prematurity and disability.
- When exploring inter-site variations in malnutrition prevalence, disability should be accounted for by using disability-specific control charts.
- Control charts and funnel plots represent useful data to site staff and managers as sites outside of control limits, taking natural variation into account.

Funding

Emily DeLacey, Michael Quiring, James Vilus, Hang Dam and Evan Hilberg work for Holt International. Holt International holds the primary data.

Competing Interests

None

References