The nutritional status of primary school children in Kersa district, Eastern Ethiopia

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Background

What current nutritional deficiencies exist among schoolchildren?

Background

- Malnutrition is a major public health concern affecting a significant number of school age children influencing their health, growth and development, and school academic performance.

- Stunting (low height-for-age) is acknowledged as the best indicator for child growth . It indicates chronic under-nutrition and reflects the cumulative effects of under-nutrition and recurrent infections .

- Stunted children are more likely to repeat grades in school or drop out.

Background cont..

- Thinness (low BMI-for-age) corresponds to wasting and indicates acute under-nutrition, usually because of insufficient food intake or a high incidence of infectious diseases .

- In school-aged children it can result in delayed maturation, deficiencies in muscular strength and work capacity, and reduced bone density later in life

Background cont..

- In 2010, the global prevalence of malnutrition among school-age children (5-14 years old) as indicated by the prevalence of stunting, was approximately 28% (171 million children), with Eastern Africa suffering a higher rate of 45%.

- Studies from different regions of Ethiopia showed that the prevalence of stunting ranges from 9.8- 48.1% and wasting 23.3- 50% among school children, which indicated that under nutrition, is a public health problem.

Background cont..

- Anemia impairs the immune mechanisms, and causes increased morbidity which may lead to fatigue, low productivity, and a general sense of feeling unwell .

- In school children it impairs physical growth, cognitive development and school performance .

Background cont..

- World Health Organization estimated that about 40% of the world's population (more than 2 billion people) suffers from anemia. It is pervasive among schoolchildren.

- Studies from Ethiopia also showed that the prevalence of anemia among school children ranges from 5.8% - 37.6%, which indicated that anemia, is a public health problem .

Objective

To assess the nutritional status of primary school-aged children in Kersa district, Eastern Ethiopia

1. To determine the prevalence of stunting and thinness among school children
2. To estimate the prevalence of anemia in school children
3. To identify determinants of under nutrition among primary school children

Methods

Design, setting and sample

- Cross sectional study was conducted among school children aged 5-14 years in 12 public primary schools of Kersa district Eastern Ethiopia. Demographic and Health surveillance (KDH-HRC)
- The survey was conducted during January - February 2012.
- The study population was student-parent pair.
- Students were selected randomly proportional to the student size of the study schools.
- Sample size was calculated assuming stunting prevalence of 27% at 95% confidence level and a margin of error of 2 (Total= 2081)

Methods

Data collection

- Interview using a pre-tested structured questionnaire translated into the local language (*Afan Oromo*)
- Anthropometric measurements: according to WHO standard procedures
- Physical assessment
- Hemoglobin determination was done by taking a finger-prick blood sample using a Hemocue haemoglobinometer (Hemocue, angelholm, Sweden).
- Dietary assessment was done using food frequency questionnaire
- Data collectors (Nurses, lab technicians and experienced KDH-HRC staff
- Data quality assured

Methods cont…

Data analysis

- The data were double entered using EpiData 3.1 software and analyzed using SPSS version 16.
- Descriptive statistics were used to summarize categorical variables while mean and standard deviations were used to present continuous variables.
- WHO AnthroPlus soft ware was used to calculate the z-score values for height-for age and BMI-for-age.
- WHO 2006 new reference values for school boys and girls used to assess thinness and stunting.

Methods cont…

- Hemoglobin level was divided into four for two age categories. (according to WHO classification)
- For children 5 to 11 year; >11.5 g/dl normal, 11.0-11.4 g/dl mild anemia, 8.0-10.9 moderate, and < 8.0 g/dl severe anemia.
- For children 12 to 14 year; >12 g/dl normal, 11.0-11.9 g/dl mild anemia, 8.0-10.9 moderate, and < 8.0 g/dl severe anemia
- Hemoglobin concentrations were corrected for altitude as proposed by the WHO.
- Logistic regression model was employed to ascertain any significant association between independent variables and outcome variable. .

Results and discussion

Demographic characteristics of the students

- A total of 1768 school children 5-14 years participated in the study (participation rate = 85%).
- The male-female ratio was 1. 34 with 57.3% boys and 42.7% girls.
- The mean age of school children was 10.7 years (SD ±2.1) .
- Most of the children (45.4%) were early adolescent 10-12 years while 30.6% were preadolescents 5-9 years
- Fifty-two percent children were from the mother with age group of 24-34
- Eighty-four percent children were rural and 16% were semi-urban.
- Sixty eight percent fathers and 78 % mothers were illiterate.
- Majority of the mothers 1487 (93.4%) were housewives.
- Most children (77.1%) came from families with more than four children

Results cont…

Nutritional status of school children

- About nine percent (95% CI 7.6- 10.3) children were stunted while severe stunting (< -3 SD of height-for-age z-score) was 2 % (95% CI 1.3- 2.7.0) of the children.
- Stunting among children aged 13- 14 years (11.3%) was significantly higher as compared to children aged 5-9 years (7.2%).
- There was no statistical significant difference in overall stunting prevalence between boys (8.7%) and girls (9.3%).
- Thinness affected 11.6% (95% CI 10.1- 13.1) of schoolchildren; of these 1.9% had severe low BMI for age (< -3 SD of BMI for age z-score).
- Statistical significant difference observed in the prevalence of thinness ($p < 0.05$) between boys (12.9%) and girls (9.9%).

Results cont…

Multivariable logistic regression

- Children at the age 13-14 years showed a significant association with stunting and thinness (AOR 1.67, 95% CI 1.04- 2.69) and (AOR 1.62, 95% CI 1.07- 2.45) respectively.

- Females were found to be less likely than males (AOR 0.72, 95% CI 0.52 – 0.99) to suffer acute malnutrition/thinness.

- Felling hunger at school (AOR 1.51,95% CI 1.05 -2.16) and those children from families who did not have latrine (AOR 1.47, 95% CI 1.06 - 2.03) were found to be significantly associated with thinness but not stunting

Results cont…

- Prevalence of anemia among school children was 27.1% (95% CI; 24.98, 29. 14): 13.8% were mildly anemic, 10.8% were moderately anemic, and 2.3% were severely anemic.
- The prevalence of anemia among the age group 5-9 years was 188 (34.9%) and 287 (23.6 %) among the age group 10–14 years old children.
- Anemia was observed in 27.3% male and 26.8% female children (no statistical significant difference)

Results cont…

Multivariable logistic regression

paternal education AOR= 2.85 ,95% CI: 1.56- 7.01,

child age AOR= 1.59, 95% CI: 1.24- 2.04 and

irregular legume consumption AOR= 1.51, 95% CI: 1.27- 2.04

were found to be significantly associated with anemia.

Conclusion

- About 9% of school children are stunted.
- Thinness was higher than stunting indicating that acute malnutrition is more prevalent in the study area than chronic malnutrition.
- Both stunting and thinness were worsened as the study population got older.
- Felling hunger at school and not having toilet were associated with thinness.
- About a quarter of school children suffer from anemia and their educational potential is likely to be affected especially those with moderate and severe anemia

Recommendation

- Integration of nutrition interventions into a comprehensive school health programs can potentially benefit those children.
- Because stunting is not treatable it calls for preventive measures nested in multiple development sectors and requires a response that draws.

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