



# Nutritional Status And Dietary Habits Of School-Aged Children: Results From The National School Health And Nutrition Programme Baseline Survey In Malawi

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## Abstract

**Background:** The Ministry of Education and Vocational Training in Malawi is implementing, with support from a World Bank grant, a health and nutrition programme for all school children <10 years of age. An initial step in the design phase was to determine the health and nutritional status of school-age children.

**Aim:** To establish the prevalence of health and nutrition problems and dietary practices in school-age children.

**Methods:** The survey was conducted in February and March 2006 as a nationally-representative household survey with cluster sampling, stratified by three major environmental zones. A total of 2,935 children 5-10 years were weighed and measured for height and haemoglobin levels using the HemoCue. Prevalence of stunting, underweight and anaemia were determined using World Health Organization cut-offs. The prevalence of several parasites was determined as potential causes of anaemia and poor health. Household salt was analyzed by titration for iodine content. Household heads and children 8-10 years were interviewed to determine key dietary practices.

**Results:** Overall 54% of children were anaemic, 18% underweight and 30% stunted. Although 90% of salt had some trace of iodine, only 55% of households were consuming salt that was adequately iodised (≥15 ppm). Half (50%) of children had iodine deficiency disorders as assessed by urinary iodine results. The following dietary practices were found for children: 30% regularly consumed breakfast and 9% consumed 3 meals a day; 40% consumed food of animal origin, 58% consumed orange or yellow fruits/vegetables, and 74% consumed green leafy vegetables. The consumption of livestock was limited to only special occasions (in 40% of households) or several times a month (38%). A vast majority (91%) of children reported having malaria at some time in their lives. The following parasitic prevalence was found in children: 20% with malaria (trophocytes), 19% with bilharzia, and 9% with intestinal helminths. Of the children with anaemia, 12% had malaria but bilharzia or intestinal helminths were not associated with anaemia.

**Conclusion:** Both food quantity and quality consumed by children are inadequate for proper growth and good health as evidenced by high rates of anaemia, bilharzia, malaria and under-nutrition, as well as by poor intake of fruits, vegetables and foods of animal origin. This study is important and shows that school children are a vulnerable group that deserves attention to increase returns from educational investments and to optimise their contribution to national growth as adults.

## Background

### GOAL of the National SHN Baseline Survey

Provide a current assessment of the health and nutritional status of primary school-aged children 5 to 10 years of age before the National SHN Programme is implemented.

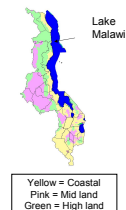
### Objectives of the National SHN Baseline Survey

Determine the following among primary school-aged children from 5 to 10 years of age:

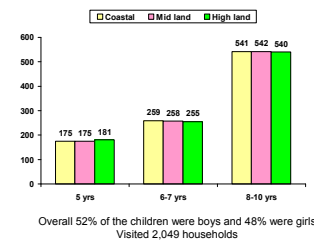
- nutritional status (prevalence of stunting, underweight and wasting, prevalence of anaemia)
- burden of specific diseases (malaria, helminth and bilharzia infections)
- knowledge and practice of good nutrition and good health behaviours.

## Methods

- Since environmental factors are related to disease transmission, sampling was stratified into three environmental zones
- Probability Proportionate to Population size (PPS) sampling done using the Malawi Demographic and Health Survey (DHS) 2004 sampling frame
- Nationally representative household and school-based survey
- 20 clusters per environmental zone
  - Coastal, Mid land, High land
- Total of 60 clusters nationally
  - National data is weighted to account for survey design
- Approved by the National Health Sciences Research Committee (NHSRC)



### Final sample size for lab results of children by age group and environmental zone (n=2935)



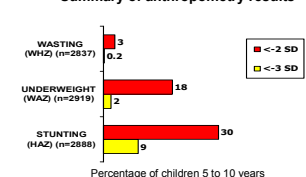
### Indicators of SHN Baseline Survey by age group and household

	5 year olds	6 year olds	8-10 year olds	Household
Anthropometry	X	X	X	
Anaemia by haemoglobin	X	X	X	
Intestinal parasites	X	X	X	
Bilharzia	X	X	X	
Malaria	X	X	X	
Urinary iodine	X	X	X	
Iodised salt				X
Questionnaire on knowledge, attitudes and practices of nutrition and health			X	X

## Results

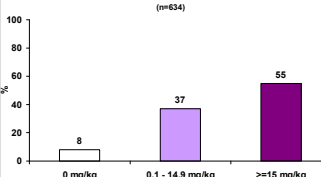
### Anthropometry

#### Summary of anthropometry results

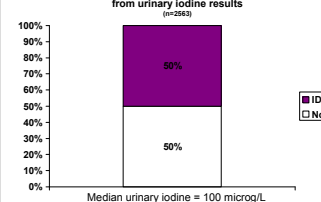


### Micronutrients

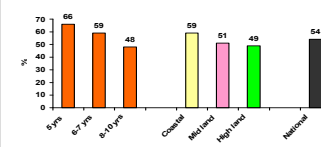
#### Salt titration results (n=634)



#### Iodine Deficiency Disorder (IDD) from urinary iodine results (n=2883)



#### Anaemia by age group & environmental zone (Haemoglobin <115 g/L) (n=2929)

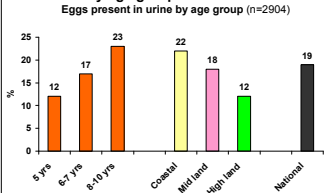


### Parasitic Infections

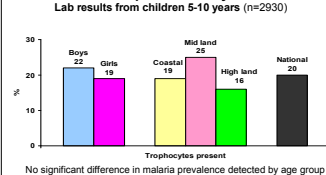
Only 9% of school-aged children (n=2724) had intestinal worms

- Hookworm = 4%
- Roundworm = 2%
- *Schistosoma mansoni* = 2%

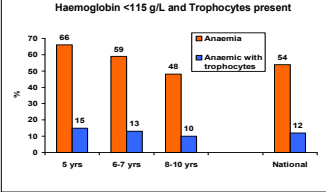
#### Bilharzia by age group & environmental zone (Eggs present in urine by age group) (n=2904)



#### Malaria prevalence by sex (Lab results from children 5-10 years) (n=2930)



#### Anaemia with malaria (Haemoglobin <115 g/L and Trophocytes present) (n=2920)



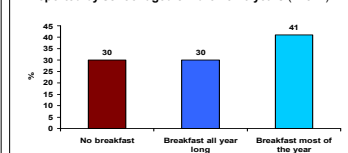
## Conclusions

Results indicate that both food quantity and quality consumed by children are inadequate for proper growth and good health.

School children are a vulnerable group deserving attention to improve their health and nutritional status for active learning, performance and achievement.

### Dietary Practices

#### Percent of children who report eating breakfast Reported by school-aged children 8-10 years (n=827)



#### Consumption on previous day Reported by school-aged children 8-10 years (n=835)

- 40% consumed food of animal origin
  - 44% any type of fruit
  - 74% green leafy vegetables
  - 58% yellow or orange fruits or vegetables
- Only 9% of school-aged children 8-10 years (n=772) report eating 3 meals a day

#### Reasons for not eating fruit and vegetables Reported by school-aged children 8-10 years

- Not available in household 86%
- Too expensive to buy 3%
- Green leafy vegetables (n=210)
  - Not available in household 78%
  - Do not like the taste 3%
- Yellow or orange vegetables or fruits (n=357)
  - Not available in household 78%
  - Too expensive to buy 1%

### Acknowledgments

A diverse group of partners contributed to the National SHN Programme in Malawi. At national level, collaborators included government (Ministry of Education and Vocational Training, Ministry of Health, National Statistical Office), NGOs (World Vision, Save the Children/US), the United Nations (UNICEF), university (Bunda College of Agriculture), and development partners (the World Bank). Thanks to all partners and co-investigators for their involvement and cooperation.

Special thanks to the communities and schools who participated in the survey.

