8.017: INTAKE OF VITAMIN A-RICH FOODS, SUPPLEMENTATION, NUTRITION STATUS AND ILLNESSES IN PRESCHOOLERS: EASTERN DRC

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Introduction

Approximately 250-500 thousand malnourished children in the developing world go blind each year from a deficiency of vitamin A, approximately half of which die within a year of becoming blind. Although till now, neither geographic distribution nor amplitude of vitamin A deficiency are known in DRC, the more than 200 deaths per 1000 live births under five mortality rate (UNICEF, 2005) is a clear indicator of the presence of VAD, this is because any under five mortality rate (U5MR) >70 indicates definite VAD problem of public health significance (Schultink, 2002). Vitamin A deficiency also diminishes the ability to fight infections. In countries where children are not immunized, infectious diseases – like measles – have higher fatality rates. Even mild, subclinical deficiency can be a problem, as it may increase children's risk of developing respiratory and diarrheal infections, decrease growth rate, slow bone development and decrease likelihood of survival from serious illness. Most of the food insecure households in DRC are concentrated in the eastern part of the country (WFP, 2009). 74% of the total population is undernourished and prevalence of acute malnutrition (wasting) is 9.6 %. This rate is near the threshold of the WHO (10 %). The levels of severe global malnutrition (Underweight) touch around 10 % of Congolese children. The objective of this survey was to establish the consumption of vitamin A rich foods, its supplementation, nutrition status and prevalence of childhood illnesses among pre-school children in banana-dependent regions of Eastern DRC.

Methodology

Cross-sectional study carried out in Eastern DRC in September 2009. Two provinces, North Kivu (NK) and South Kivu (SK) were selected based on the high levels of food insecurity. Multistage sampling was used to select territories, localities and villages. After listing of all households with preschool children in each sampled village, systematic random sampling was used to select the specific households to be interviewed. Using the following formula.

$$n=\frac{t^2 \times p(1-p)}{m^2}$$

Where n = required sample size, t = confidence level at 95% (standard value of 1.96), p = estimated proportion of HHs with preschool children with regards to total HHs, m = margin of error at 5% (standard value of 0.05) (Magnani, 1997), a sample size of 163 and 208 households with preschool children from Beni territory (NK) and Bukavu territory (SK) respectively was arrived at. Structured questionnaires were used for data collection with caregivers (mothers) as respondents. The food groups of interest included; Vitamin A rich vegetables, Vitamin A rich fruits, dark green leafy vegetables, Milk and Milk products, Eggs group and Offals especially liver (FAO,2006), this represented both Provitamin A and Preformed vitamin A. Information on age (in months) of the preschool child supplementation of vitamin A capsules in the last 6 months and prevalence of childhood illnesses was also obtained using the structured questionnaire and verified using child's health card. While anthropometric measurements (Height and Weight) were taken using standard procedures, the computerized Z-scores were then classified using WHO (2005), classification. Frequency tables, charts and graphs were used to summarize, analyze and present data.

Results

Demographic data

Of all the 371 respondents, 91.7% of them were women, 83% were monogamously married, with most of them aged between 25-34 years and the youngest respondent was aged 15 years (Figure 1). The majority of the households (60.9%) consisted of 5 to 8 members with an average size was 6.4 members in NK and 7.1 in SK. 44.7% of the respondents had not received any form of education, 32% had received incomplete primary education, 10.8% had completed primary education, while only 0.5% had gone on to a vocational college and none of the respondent had any college or university diploma/degree. Most of the households (76.3%) interviewed depended on agricultural production as their main source of income, 14% were involved in casual labour while 5.3% and 4.3% were involved in small scale business and formal employment respectively.

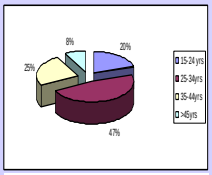

Fig 1. Age of the respondents in both North and South Kivu N=371

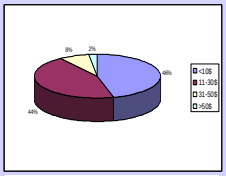

Fig 2. Average monthly household income in North and South Kivu N=371

Consumption of Vitamin A rich foods

Table 1. Consumption of Vitamin A rich foods by preschool children N= 370

Food group and Item percentage	Proportion of households in		
	North Kivu N=162	South Kivu N=208	Total N=370
Vit A rich veges,tubers & banana	0.00%	1.44%	0.80%
Carrots	0.00%	0.00%	0.00%
Orange-fleshed sweet potato	0.00%	1.44%	0.80%
Plantain banana	9.90%	10.60%	10.30%
Dark green leafy veges	77.16%	47.12%	60.27%
Amaranths spp. Leaves	3.40%	0.00%	05.95%
Cassava leaves	58.50%	18.30%	45.68%
Bean leaves	3.70%	8.70%	6.49%
Sweet potato leaves	0.00%	0.00%	0.00%
Pumpkin leaves	0.00%	3.40%	1.89%
Vit A rich fruits	11.1%	11.54%	11.35%
Paw paw	0.60%	0.96%	0.81%
Ripe mango	0.60%	0.00%	0.27%
Milk and Milk products	0.00%	0.00%	0.00%
Eggs	0.00%	0.00%	0.00%
Organ meat (liver)	0.00%	0.00%	0.00%
Fats and oils (local red palm oil)	68.50%	88.46%	79.73%

Nutrition status

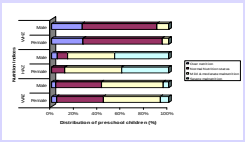

Fig 4. Nutrition status of Preschool children in North Kivu by gender N= 162

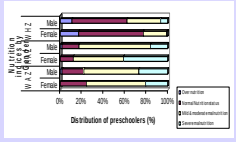

Fig 5. Nutrition status of Preschool children in South Kivu by gender N=208

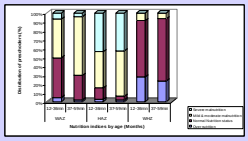

Fig 6. Nutrition status of preschoolers from North Kivu by age N=162

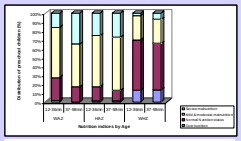

Fig 7. Nutrition status of preschoolers from South Kivu by age N=208

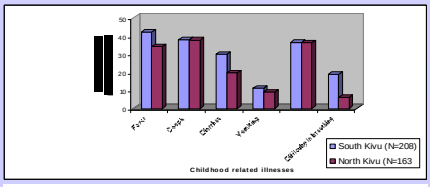

Fig 3. Prevalence of childhood illnesses among the preschoolers

Table 2. Immunization and Vitamin A supplementation among preschool children in Eastern DRC

Intervention	Proportion of children in (%)		
	North Kivu N=162	South Kivu N=208	Total N=370
Not fully immunized & no Vit A suppl..	1,3	2.4	1.89
Fully immunizes but no vit A sup..	1,3	6.3	4.05
Received vit A sup...not fully immunized	4.0	6.7	5.41
Fully immunized & received vit A sup..	93.4	84.6	88.38

Conclusions

The consumption of dietary sources of Vitamin A is poor with that of preformed vitamin A extremely poor, while the coverage Vitamin A supplementation and immunization is >80%.

Fever (symptom of Malaria) is the most prevalent childhood illness while stunting is the most prevalent form of malnutrition. Both stunting and underweight are of public health concern in Eastern DRC.

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Recommendations

Researchers to identify locally cultivated plants that if properly processed/cooked could help communities meet their Vitamin A requirements.

In addition to supplementation, communities to be capacitated to access both preformed and provitamin A through food-based approaches. This approach enable individuals to access other nutrients (macro an micro) in the process and facilitate nutrient-nutrient interaction. In addition, it is unlikely to have nutrient toxicity.

Sustainable strategies of enhancing and supporting food security and health i.e., political stability, diversified highly nutritious crops, keeping of small animals, access to proper health services and access to incomes (microfinance) should be promoted

Acknowledgement

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Key references

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