

COMMUNITY BASED NUTRITIONAL SURVEY: GERUKE JIMAT PEASANTS' ASSOCIATION, ILUBABOR REGION, ETHIOPIA

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INTRODUCTION

Adequate nutrition is a basic need and prerequisite for health. Its promotion has been made one of the eight elements of PHC. In many developing countries the balance between an adequate level of nutrition and malnutrition is finely posed. Relatively minor changes in the environment or political-economic situation of a region can seriously disturb this balance and precipitate widespread malnutrition.

Ethiopia's population is over 80% rural and heavily dependent upon agriculture for its livelihood. Despite the country's agricultural potential, the sector remains under developed and per-capita food production and consumption remains less than optimal. Illubabor Region has greater farming potential than most regions of Ethiopia. Farmable land is abundant and the annual rainfall sufficient to support its population of 3.5 million inhabitants. In spite of this situation, childhood malnutrition has been reported to be widespread within the region and in excess of national rates.

The regional health office in Illubabor has identified malnutrition as one of its leading priority health problems. During preliminary discussions leading up to the arrival of the fourth accelerated district health managers' field experience in the region, it was agreed that a survey examining factors predictive of childhood malnutrition be carried out. Of particular interest was the need to examine factors which during periods of expected food self-sufficiency explained the continued presence of malnutrition. It is expected the results of this survey will assist the local health institutions and other sectors in the future prevention of malnutrition.

METHODS

Study Design and Setting: A cross-sectional survey was carried out in November 1989 in a rural peasant association (Geruke Jimate and Dala villages) located within Mana Kersa District, Illubabor Region of southwestern Ethiopia. These two Moslem villages were selected because of persistently high levels of reported malnutrition in the area for reasons unclear to the district and regional health offices. The villages are located among fertile lands with adequate rainfall 8 months of the year.

Study Population: Any household with a child between 6 and 59 months of age was eligible to enter the study. Of the 284 households visited, 108 had a child under five-years of age for a total of 136 children.

Measurement: Weight was measured using a hanging Salter spring balance with a capacity of 25 Kg. for children under two-years of age and an upright adult scale for the remainder. Readings were made to the nearest 0.1 kg. For children under two length was measured by having them lie down on a wooden length board with a flat surface. Older children were measured using a vertical, fixed rod attached to the adult scale. Length was recorded to the nearest 0.1 cm. Each child was examined for the presence of edema.

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Using WHO guidelines¹ each child's percentile of expected for weight for height and height for age and standard deviation were tabulated. Following the Waterloo method, children were then classified as 1) normal, 2) stunted; $\leq -2SD$ Ht/Age, 3) wasted; $\leq -2SD$ Wt/Ht, or 4) stunted + wasted. Children in category 3 were considered to be acutely malnourished, those in category 2 to be chronically malnourished, and those in category 4 to have elements of both. Those with acute or active malnutrition were compared with normal children for odds of exposure to the factors documented in the questionnaire and the appropriate odds ratios were calculated.

The mother, or in her absence primary caretaker, was interviewed using a pretested questionnaire which documented socioeconomic, cultural, and health related factors potentially predictive of malnutrition. The questionnaire was translated into Oromo from Amharic and pretested in a village similar to those surveyed. During pretesting the translation of the questionnaire, understanding of content, and time required for completion were verified. Appropriate modifications were then made.

RESULTS

The 136 children entered into the study came from 108 households. All heads of households were farmers and 70% of the mothers interviewed were illiterate. Fifty-three of the children were under two-years old and the male to female ratio was 1:1.

The results of the anthropometric measurements are summarized in table 1. Based upon

Table 1. Age distribution according to nutritional status.

Age years	Nutritional Status Category				Total	%
	1	2	3	4		
<	26	17	5	5	53	50.9
>	32	32	8	11	83	61.4
Total	58	58	13	16	136	100

Total nutritional prevalence rate = 57.4%

2 = Stunted children = 37%, 1 = normal = 32%

3=Wasted children=9%, 4=Both wasted & stunted=12%

standard deviation from expected calculations the overall prevalence of malnutrition was 57.4%; 37% stunted, 9% wasted, and 12% stunted + wasted. Alternatively, based upon determination of the overall percentile distribution of these children, 52.9% were below the 3rd percentile for Ht/Age and 29.7% were below the 3rd percentile for Wt/Ht. The percentage above the 50th percentile for these two measurements were 10% and 7% respectively.

Among the household surveyed, 56.9% were farming cereals and vegetables exclusively, while another 37.3% also harvested cash crops (either coffee or khat). Crops were sold by 33.1% and additional food purchased in markets by 64.7% of households. Unsafe water was consumed by 42% of the sample. All the children surveyed had been or were presently being breast fed. Supplementary feeding was started before 4 months in 11.7% and between 4 and 6 months in 32.3%. Mothers were asked if, in their opinion, their community had suffered from a famine at anytime in the past two years and 85.7% replied in the affirmative. Two-thirds gave inadequate rain as the reason, while 9% thought it was due to poor farming habits.

Table 2 summarizes the bivariate analyses for the strength of association between nutritional

Table 2. Different categories of nutritional status in relation to exposure to socio-economic, cultural and health related determinants as calculated by odds ratio.

Determinants	O.R. acute malnutrition	O.R. for chronic malnutrition
Age group between 24-35 months	1.56	1.90
Early supplementation of food (<4 months)	1.90	0.88
Number of meals/day (<2)	*	2.40
Unsafe water supply	2.04	1.79
Absence of history of bottle feeding	2.00	1.70
Family not possessing oxen	1.52	1.37
Family not possessing cow	1.24	1.04
Illiteracy of mother	2.89	1.07
Not buying food item	1.25	1.51
Selling food crops	1.96	2.27
Growing food crops	1.82	2.56

* inadequate number for analysis

status and specific exposure histories. These are reported separately for those with acute and chronic malnutrition. Acute malnutrition had highest odds of exposure (odds ratios over two) to unsafe water supply and mother being illiterate. Chronic malnutrition had highest odds of exposure to less than two meals per day, selling of food crops, and growing cash crops. Malnutrition was not significantly associated with breastfeeding (little variance), family size, number of different food items feed child, marital status, eating patterns, and reported morbidity.

DISCUSSION

The overall prevalence of malnutrition in the villages is high. Similar results have been reported in Gondar Region at times when no drought was suspected². The national figure ranges from 27% in Addis Ababa and East Hararge Region to 40% in the former Kefa Region³. Our study found a predominance of chronic malnutrition in under five children. The finding that most of the children are below the 3rd percentile for height for age attest to the gravity of the problem and the need for further preventive efforts.

The finding that 58% of the population obtains water from safe sites is high compared to the national figure of 6.3% and 4.2% for the Region^{3,4}. The importance of safe water consumption in the prevention of malnutrition is supported by the strong protective effect it had on acute and chronic malnutrition in this survey. The effect of early food supplementation on acute malnutrition found in this study was contrary to an expected greater effect on chronic malnutrition. This association was not examined in the Gondar study since none of the children received supplementation prior to 4 months². We were unable to ascertain additional Ethiopian studies examining this relationship. This association needs to be examined further. The ownership of oxen or cows provides an indirect measure of the family's wealth. Ownership of cows also is related to opportunity for milk consumption and oxen to the food production capacity of the family. The presence of either had modest protective associations with malnutrition.

Among the study population, 69% had a history of bottle feeding. Even more surprising was the finding that such exposure had a protective effect. It should be pointed out these were crude, bivariate analyses which do not control for important confounders such as socioeconomic status (SES). It may be that those bottle fed are of higher SES. Moreover, since the majority of mothers during the day are in the field with their husbands, it is likely those infants left at home and bottle fed are ensured nutrition.

The finding that chronically malnourished children are much more likely to come from household selling their food and engaged in cash crop production may prove to be very important in explaining the high prevalence of malnutrition in this region. Those selling food are not necessarily those with excess production. Selling of food may also be associated with family instability, a factor which deserves much greater emphasis in future etiologic investigations. There is a long history of cash crop production in the region and a tremendous

dependence upon it. Those engaged in cash crop production may do so at the expense of food crops, thus placing their families in a much more vulnerable food security situation, in particular during years when cash crops fail. These findings corroborate the theory of "green famine" in the region.

CONCLUSIONS

This cross-sectional survey, conducted in an area with adequate rainfall and fertile land, has shown a high prevalence of acute and chronic malnutrition. Compared to an unpublished survey carried out in the same villages two years previously the prevalence of malnutrition has risen and reveals an important public health problem requiring immediate action. The major factors at play are related to economic, cultural, and social shortcomings governing the farming practices, environmental sanitation, and feeding practices of the communities studied.

RECOMMENDATIONS

1. An urgent evaluation of the food security situation in the study area and the District as a whole, with the view to instituting food supplementation programs for the more severely malnourished children.
2. Liaison with the agriculture sector to promote nutritionally optimal food production and improve its storage and distribution.
3. Greater efforts should be made in nutrition education, with an emphasis on early childhood feeding and factors effecting nutritional status.
4. Involvement of the community in recognizing its existing problem of childhood malnutrition and in identifying solutions.
5. Expanded access to safe water.
6. Establishment of a local growth monitoring station.
7. Institution of a regularly scheduled

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