MICRONUTRIENT FORUM GLOBAL CONFERENCE
ADDIS ABABA, ETHIOPIA
2-6 JUNE 2014

EXAMINING MEANS OF REACHING SCHOOL AND NON SCHOOL ATTENDING ADOLESCENT GIRLS FOR IRON SUPPLEMENTATION IN TIGRAY REGION, NORTHERN ETHIOPIA.

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Background: The child bearing age of women (especially pregnancy and lactation), adolescence and early childhood are the most nutritionally-vulnerable stages of the life cycle. The nutritional vulnerability of young children, adolescents and women stems from their physiologically-higher nutrient requirements, which are often not met. Adolescence, the time period between 10 and 19 years of age, is characterized by rapid growth and development next to the period of infancy. Such remarkable physical growth and development significantly increases needs for both macro and micronutrients. These concerns make the period of adolescence extremely vulnerable to the consequences of suboptimal nutrition.

Objective: Examine means of reaching school and non school attending adolescent girls for iron supplementation in Tigray region, Northern Ethiopia.
Methods: Analytical cross-sectional study consisting of both quantitative and qualitative approaches to data collection and analysis was used in this study. Stratified multi-stage systematic random sampling technique was adopted and primary quantitative data was collected by mainly a survey of 828 adolescent girls. Data was cleaned and coded before entering into a computer. Following the coding and cleaning, data was entered into a computer for statistical analysis using SPSS version 20. Percentages or means and standard deviation were computed for baseline characteristics of adolescents interviewed. The relationships between variables (association between single explanatory variable and dependent variable) were examined through bivariate analysis, by computing odds ratio at 95% confidence level and chi square where appropriate. To identify factors associated with outcome variables, multivariate logistic regression at 95% CI was used. A p value < 0.05 was considered as statistically significant. Information that was collected through key informant interviews and focus group discussions was transcribed and qualitatively analyzed.

Results: data was collected from 828 (578 school going and 250 non school going) adolescent girls recruited from nine districts of Tigray. The mean (sd) and median (range) ages were 16.7 (1.4) and 17.0 (9) years, respectively. Farming was the predominant occupation of the mothers, 392 (49%) and fathers, 504 (69%) of the adolescent girls. A significant proportion of adolescent girls, 250 (30%) were non school going at the time of data collection. More than half, 467 (56%), of the adolescent girls believed that adolescent girls were overloaded with household everyday jobs compared to boys from their respective communities. The common source of drinking water for the adolescent girls were public tap/standpipe, 396(47.8%) and tap water piped into the dwelling, 195(23.6%). But of course, significant number of the adolescent girls, 137(17%), reported that they did walk for more than 30 minutes to fetch water for domestic consumption from the nearby drinking water sources. Almost all of the adolescent girls, 823 (99.4%) and 812(98%) had a habit of washing hands before feeding themselves and after using toilet. Burial was reported to be the preferred method of disposing wastes, 350 (42%) in the households of the adolescent girls. Early marriage was amongst the harmful traditional practices reported by 13% the adolescent girls. Treatment during illnesses, 506 (61.3%), health education, 576 (69.6%), immunization, 491 (59.5%), reproductive health services, 506 (61.3%), de-worming, 176 (21.3%) and supplementation, 274 (33.4%) were reported to be the health services provided by the nearby health facilities. The frequency of eating foods that are not preferred, eating limited variety of foods, eating foods that are not wanted, eating smaller meal than needed and eating few number of meals was 212(26%), 192(23%), 135(16%), 217(26%) and 141 (17%), respectively. Quite significant proportion of the adolescents gave affirmative responses to worrying about food inaccessibility (31.6%), inability to eat preferred food (25.6%) and availability of a limited variety of food (23.2%). About 526(63.5%), 211(25.5%), 88(10.6%), and 3(0.4%) of households were food secure, mildly food insecure, moderately food insecure, and severely food insecure, respectively. By the same token, about 447(54%), 355(42.9%) and 26(3.1%) of the adolescent girls had low, medium and high diet diversity scores, respectively. According to the logistic regression analysis, age (COR: 1.217; 95 CI: 1.071, 1.384), educational level (COR: 0.50; 95% CI: 0.275, 0.908), workload (COR: 1.673; 95% CI: 1.084, 2.583) and workload (AOR:2.612; 95% CI: 1.419, 4.811) were significantly associated with the perceived iron status of the adolescent girls.

Table 1: Preferred facilities for iron supplementation in school going and non school going adolescent girls, 2013 (n = 828).

Variable		Non school going (n)	School going (n)	Chi square	P value
School	Yes	28	287	107.128	< 0.0001
	No	214	280		
Health post	Yes	102	167	11.47	0.001
	No	141	400		
Health center	Yes	118	170	24.82	<0.0001
	No	125	397		
Hospital	Yes	4	12	0.201	0.654
	No	239	555		

Conclusion and Recommendation

The health posts and health centers were the preferred health facilities for iron supplementation to non school going adolescent girls while the school was the preferred facility for iron supplementation of school going adolescent girls. Provision of sustained nutrition education about adolescent nutrition, anemia and iron supplementation and the implications of heavy workload to adolescent girls, school teachers, community influential and health workers at the community level; the start of iron supplementation in schools for school adolescent girls and health posts and health centers for non school going adolescent girls from communities where the prevalence of anemia is high and operational research on the best approach (daily, weekly or intermittently) for therapeutic iron supplementation for school going and non school going adolescent girls are recommended.

Acknowledgment

The study was supported by the Ethiopian Public Health Institute (then Ethiopian Health and Nutrition Research Institute) and the World Bank. The support from Mrs. Aregash Samuel from EPHI, local administrators, school administrators and study participants is highly appreciated.

Table 2: Bivariate and multivariable analysis of factors associated with perceived anemia status of the adolescent girls, 2013 (n = 828).

Variables		Perceived anemia status			
		No	Yes	COR (95% CI)	AOR (95% CI)
Age		682	146	1.17(1.071, 1.384)*	1.074(0.852, 1.354)
Educational level	9th	307	53	0.50(0.275, 0.908)*	0.551(0.228, 1.329)
	10th	60	17	0.82(0.388, 1.736)	0.946(0.372, 2.408)
	11th	53	14	0.765(0.348, 1.679)	0.83(0.339, 2.034)
	12th	55	19	1	1
Distance to health facility	< 30 minutes	400	90	1.519(0.698, 3.303)	1.072(0.415, 2.766)
	30 – 60 minutes	213	39	1.236(0.546, 2.798)	1.139(0.426, 3.042)
	>60 minutes	54	8	1	1
Distance to school	< 30 minutes	166	44	1.452(0.820, 2.571)	1.322(0.655, 2.668)
	30 – 60 minutes	192	36	1.027(0.572, 1.844)	1.01(0.521, 1.956)
	>60 minutes	115	21	1	1
Livestock	No	210	44	1.031(0.699, 1.522)	1.631(0.929, 2.861)
	Yes	472	102	1	1
Workload	Less than boys	115	15	0.811 (0.421, 1.561)	0.661(0.23, 1.9)
	More than boys	368	99	1.673(1.084, 2.583)*	2.612(1.419, 4.811)*
	Same	199	32	1	1
Health education	No	209	41	1.136(0.765, 1.689)	1.278(0.725, 2.252)
	Yes	471	105	1	
Immunization	No	276	58	1.039(0.721, 1.497)	1.061(0.607, 1.854)
	Yes	403	88	1	
Reproductive health	No	273	47	1.413(0.967, 2.065)	1.652(0.972, 2.807)
	Yes	407	99	1	
Deworming	No	535	115	0.995 (0.642, 1.540)	0.963(0.43, 2.159)
	Yes	145	31	1	
Supplementation	No	448	99	0.866(0.587, 1.277)	0.716(0.358, 1.433)
	Yes	230	44	1	