ORIGINAL ARTICLE

EFFECTIVENESS OF NUTRITION COUNSELING IN IMPROVING FEEDING PRACTICES OF CHILDREN IN FOUR REGIONS OF ETHIOPIA

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ABSTRACT

Background: *Malnutrition is an underlying cause of death for more than 3.5 million children under the age of five each year globally. In Ethiopia according to 2019 EDHS, 7% of children were wasted, 1% severely wasted, 37% stunted, and 12% severely stunted. There are a number of proven nutrition specific interventions which can eliminate large number of deaths. Health workers and health extension workers were trained in key maternal, infant and young child feeding practices/messages, negotiation, and interpersonal communication skills, including complementary feeding demonstration. They counseled mothers on correct feeding practices.*

Objective: *to monitor the changes in feeding practice of children after nutrition counseling in four regions of Ethiopia supported by Integrated Family Health Program (IFHP).*

Methods*: Cross sectional surveys were conducted annually, January to March 2011-2016. Data were collected using standard checklists, containing selected questions on child feeding practices in 2,500 randomly selected households. Data entered and analyzed using SPSS16.0 version.*

Results*: Women who received ferrous sulphate with folic acid during pregnancy more than doubled in five years (from 39.1% to 88.4%), Early initiation of breastfeeding within one hour of birth increased from 70.4 to 91.3%, exclusively breastfed from 57.7% to 84.6%.Children who started complementary feeding at age of six months increased from 60.8% to 81.3%,(p-0.0001), Children 6-11 months who ate solid/semisolid 2-3 times a day from 55.7% –to 62.6% (P= 0.02),12 -23 months of age who ate solid/semisolid 3-4 times a day increased from 61% to 74.7%. Children 6-59 months of age who received vitamin A capsule in the last six months from 86.5% to 92.6% (P<0.0001).*

Conclusion*: Counseling mothers on breast feeding and complementary feeding at different contacts using Essential Nutrition Action (ENA) and complementary feeding demonstration at health facility and community level have brought improvement in child feeding practices..*

Key words: *breast feeding, complementary feeding, essential nutrition action*

INTRODUCTION

Malnutrition is an underlying cause in 45% deaths of children under the age of five years. Globally under nutrition is the cause for more than 3 million deaths annually. The period from birth to two years of age is important for optimal growth, health and development, especially since it is during this period children are vulnerable to growth retardation, micronutrient deficiencies and childhood illnesses. Malnutrition in women contributes to fetal growth restriction increasing risk of neonatal deaths, and survivors stunting by two years of age (1, 2,and 3).

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In Ethiopia prevalence of stunting decreased by 36%in 20 years, (2000-2019), 58% to 37%, underweight by 49% (41% to 21%), but wasting decreased by 42% (12% to7%) the same year. The EDHS 2012 showed Women with BMI less than 18.5 kg/m2 were 27%. Only 58% of children under six months of age were exclusively breastfed, 7 % of children age 6-23% months were fed on minimum acceptable diet. Prevalence of anemia among women in the reproductive age group was 23%(4, 5).

The causes of malnutrition are directly related to inadequate dietary intake as well as diseases but indirectly to many factors, among others household food security, maternal and child care, health services and the environment (6).

There are workable solutions; pre conceptual folic acid, maternal balanced energy protein , nutrient supplementation in pregnancy, promotion of breastfeeding, appropriate complementary feeding, vitamin A supplementation in children.If these nutrition-specific interventions through counseling within their given resources scaled-up, feeding practice of children can be improved , and many lives could be saved in high malnutrition-burden countries.(6, 7, 8).

Poor child feeding practices are associated with cultural factors that may create local tendencies toward selection of low-quality complementary foods taboos and restrictive traditional beliefs, social factors including caregivers' poor knowledge on nutrition may correlate with poor feeding practices. Such factors may result in low feeding frequency, and low food and energy intake for children. Caregivers' nutrition education can help to clear tradition-based misconceptions and improve their nutrition knowledge. Feeding practices can thus be improved if health-workers counsel mothers on proper feeding practices. Such elements are essential to improve children's nutrition status (9).

In Pakistan, Uganda, Tanzania and Eastern Ethiopia studies showed the impact of nutrition education on the nutritional status of children living in resource-limited environments. Intervention strategy was nutrition counselling targeting mothers. Primary outcome was changes in the feeding practices, and decrease in the severity of wasting(10, 11, and 12).

The aim of this paper is how nutrition counseling based on essential nutrition action and feeding demonstration can help to improve feeding practices of children.This in turn can help to prevent malnutrition in the country.

Methodology

Integrated Family Health Program (IFHP) supported delivery of health and nutrition services in the community in 300 districts of Ethiopia, (Oromia, Amhara, SNNP and Tigray). Health Workers (HW) and Health Extension Workers (HEW were trained on Essential Nutrition Actions (ENA) practices/ messages, negotiation, interpersonal

communication skills, and complementary feeding demonstration. They counseled mothers or caregivers to optimally feed their infants, children and care for their own nutritional needs. The training approach promoted the principles of behavioral change communication of small do-able actions. It included working with community support group, such as the Health Development Army (HDA). Post training follow up, and supportive supervision, and review meetings were conducted to strengthen the intervention.

Study period: We conducted cross sectional surveys once in a year from 2011-2016 (January to March) to monitor outcomes of nutrition interventions in the target woredas.

Sample size and sampling procedure

We selected 2,560 households (640 in Amhara, 960 in Oromia, 480 in Tigray and480 in SNNP Would allow detection of 12% change in coverage every year, assuming initial prevalence 50%, a design effect of 1.5, and non-response rate 10%

IFHP had 16 implementation clusters or zones (groups of woredas) in the four regions. They prepared sampling frame, from which woredas, health centers (HCs) and health posts (HPs) , and households (HHs) were randomly selected. The following ratios were used: Five HHs per HP, two HPs per HC, and two HCs per woreda.

Interviewers selected HHs using a random walk technique determining direction from of the selected village by bottle spin, and choosing the fifth house along that ray. Each cluster provided 160 HHs, thus each survey used different, randomly selected samples.

Data collection methods and processes

Data were collected using check lists for household containing selected questions for each area of focus for recording purposes. Data collector interviewed mothers on ferrous sulphate with folic acid supplementation during pregnancy, key feeding infant and young child practices like breast feeding, complementary feeding , and vitamin A supplementation. The variables collected were; women with children 0 to 11months, who received ferrous sulphate with folic acid, while they were pregnant. Infants aged 0 to 5 months, who started breastfeeding within one hour of birth. Infants aged 0-5 months who were exclusively breastfed, Children 6 to 23 months were started on complementary feeding at the age of six months, Children 12 to 23 months who ate semisolid food 3 to 4 times a day, Children 6 to 59 months who received vitamin A capsule in the last six months. The checklists included standard questions that were used to calculate key indicators in household surveys. Data collectors were IFHP cluster officers and regional program office staffs. All attended a 2daystraining on completing the checklists, eligible house holds election and other data collection procedures.

Data quality control

The principal investigator and supervisors monitored data collection. Completed forms were submitted to IFHP country office,

where skilled data entry clerks performed double data entry on random sample of 10% of the forms.

Data processing and analysis

The team of data entry clerks performed the data entry. Their roles included office editing, data entry, and random verification of entered data. Data encoding, entry and processing were managed by the country office monitoring and evaluation team. The data were entered and analyzed using SPSS16.0 version. Basic analysis tools such as univariate tables, percentage analysis and graphs were produced

Ethical aspects Consensus was reached with RHBs, zonal and woreda health offices to conduct the follow up and verbal consent was obtained from households before collecting information.

Results

Outcome of intervention on IFA coverage: Figure 1 shows the coverage of IFA use among pregnant women in the five years of intervention period. We found that the IFA coverage improved from 39.1&% in 2011 to 88.4% in 2016 (p value=0.0001) the trend was linear increase up to up to 2014, small decrease in 2015,increasedagainin 2016.

Outcome of intervention on breastfeeding: Infants aged 0-5 months started breastfeeding within one hour of birth increased from 70.4 to 91.3%, showed 30% change (Figure 2).Infants who were exclusively breastfed increased from 57.7 to 84.6%, 47% change. Children who started complementary feeding at age of six months raised from 60.8to 81.3%,P=0.0001, 34% change. (Figure3), Children 6-11 months who ate solid semisolid 2-3 times a day from 55.7 – 62.6%,P=0.02, showed only 8% change. Children12 -23 months of age who ate solid or semisolid food 3-4 times a day increased from 61% to -74.7% (Figure 4), 23% change. Even through Percentage of Children 6-59 months of age who received vitamin A capsule six months prior to survey was high 86.5%, still increased to 92.6% (P=0.0001),7% change (Figure 5). The trend in all was linear growth up to 2014, small decrease in 2015 in exclusive, small decrease in 2015, and increased again in 2016. The percentage of children who started complementary feeding, and ate solid/ semisolid food remained the same in 2015, and 2016.The trend in percentage of children who received vitamin A was linear throughout,

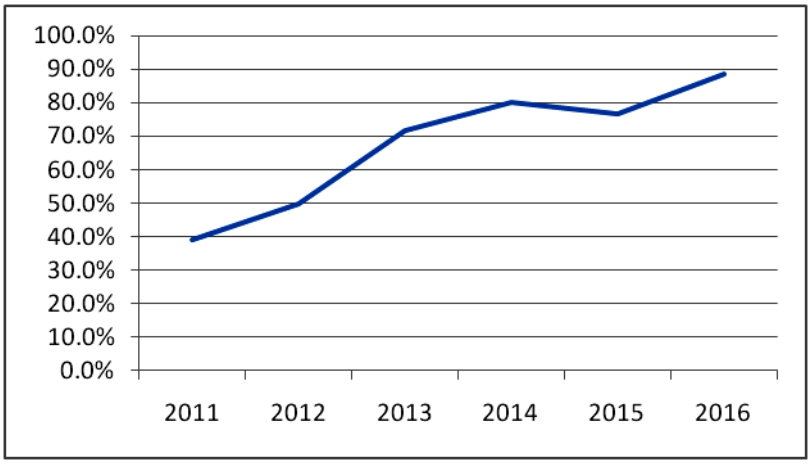

Figure 1.Womenwho received Ferrous Salt plus Folic Acid when pregnant

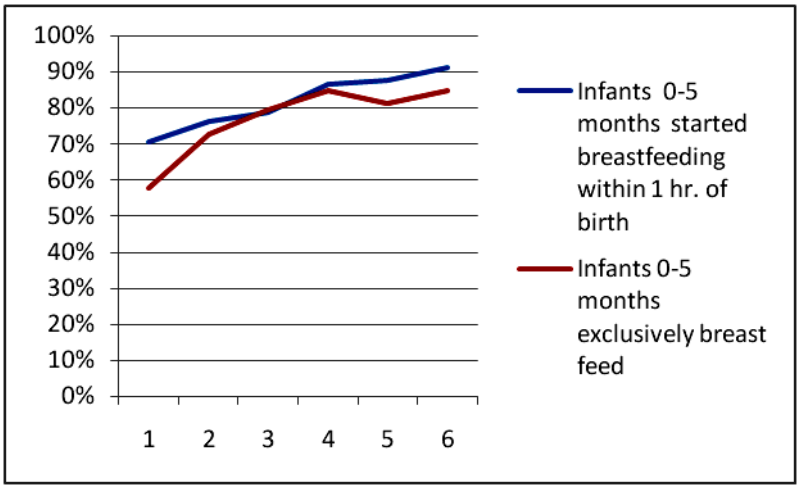

Figure 2.Breastfeeding

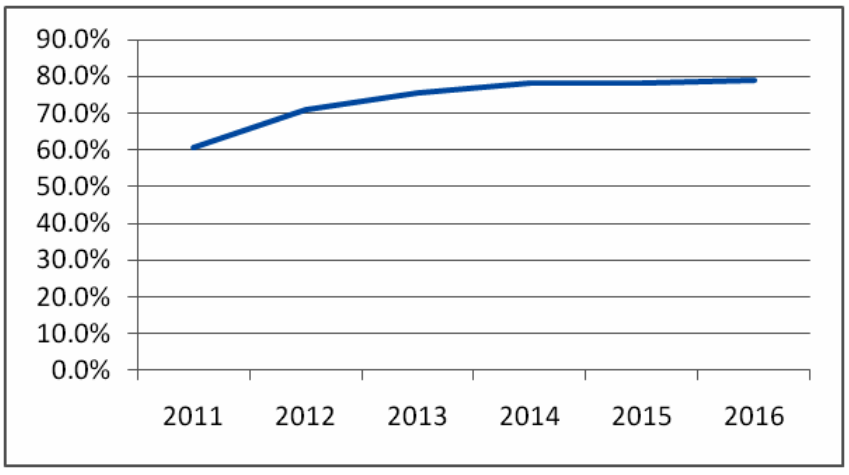

Figure 3.Children6- 23 months who started complementary feeding at age of 6 months

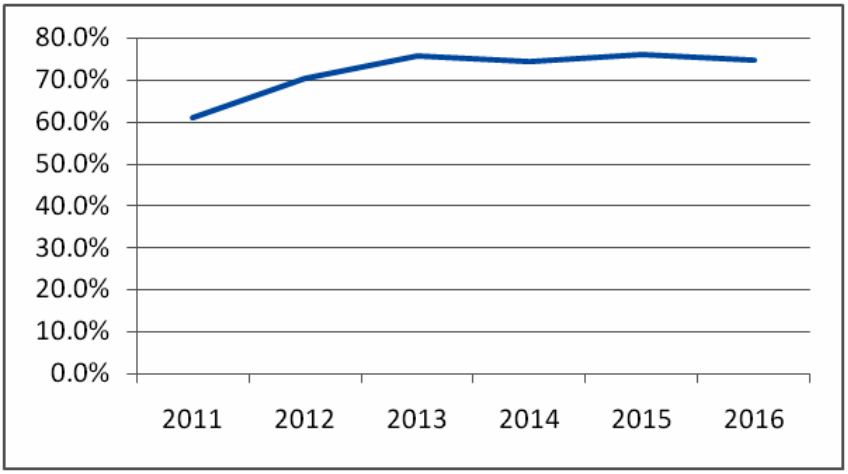

Figure 4.Children 12-23 m ate solid or semi-solid 3-4 times a day

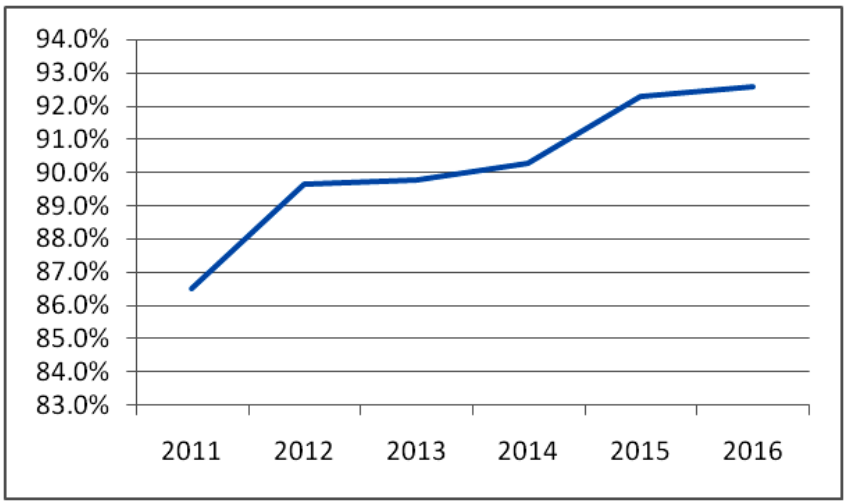

Figure 5.Children6-59 months received Vit. A capsule 6 months prior to survey

Discussion

Women who received ferrous sulphate with folic acid during pregnancy more than doubled in five years(39.1% to 80.1%).Infants 0-5 months of age, exclusively breastfed improved from 57.7% to 84.6%.Infants aged 0-5 months who were started on breastfeeding within one hour of birth increased from 70.4% to91.3%, Children who started complementary feeding at age of six months increased from 60.8% to 81.3%.Children 6-59 months who received vitamin A capsule in the last six months high at the beginning, 86.5% still improved to 90.3%. Children 12 -23 months of age ate solid/semisolid 3-4 times a day ,increased from 61% to 74.1% ,higher than those 6-11 months who ate 2-3 times a day which increased from 55.7% only to – 62.6%.

Infant and young child feeding improved practice improved significantly due to counseling on breast feeding, and complementary feeding, with demonstration. Our results are similar with Alive and Thrive survey result which was done in the same area,in2014, and showed improvement in early initiation of breast feeding from 67% to -82 % (IFHP from 70.4% to -84.5%),exclusive breast feeding under 6 months from 72% to -83% (IFHP from 57.7% to -84.6%),minimum food frequency from 46% to -70% for 6-23.9months (IFHP from 61.1-to 74.7, for 12-23 months)(p -0.0001)(14). The L10KE survey done in other areas showed significant increase in exclusive breast feeding from 66% to -93%, colostrum feeding from 44- to 74% (15).IFHP end line survey did not show significant increase in early initiation of breast feeding (2009-2013), from 52.5% to -57.9%, colostrum feeding increased significantly, from 66.8% to -77.9% ($p<0.001$), semisolid and food in 6-9m.from60.1% to -72%, (not significant), but exclusive breast feeding decreased significantly from 82.4- to 72%($p<0.001$)(16).This may be due to difference in methodology. In Madagascar six years implementation of project based ENA has improved initiation of breastfeeding from 32% to -68%, exclusive breastfeeding under six months from 42- to 70%, the rate of continuation of breastfeeding at 20-23 months, from 43% to -73%, minimum recommended number of meals 87-93%, and iron folic acid supplementation in pregnancy from17 to -54% (17).The results are similar to that of ours except early initiation of breastfeeding in Ethiopia and minimum food frequency in Madagascar were high initially and increment was minimum . In Nepal the proportion of children who received four or more food groups increased from 40% -to 48% after four years of implementing ENA (18).In Niger five year implementation of ENA framework has helped to reduce anemia of pregnant women and children from 62% to 7%, and 73 to 51%respectively (19).

In Ethiopia, the health service coverage reached 92.1% in 2011, up from 64% in 2004.The HEP service including ICCM is delivered at health facility and community levels, which might have the highest impact in mortality reduction. This will facilitate scale up of ENA at national level. The country has met MDG by decreasing Child mortality from 204 in 1990 to 55/1000 live births in 2012 (20).

Expanding nutrition specific health interventions at the same time addressing agricultural productivity, food insecurity and diet diversity which needs multisctorial approach will help to reduce malnutrition significantly. Multicountry study showed decrease in stunting and underweight (18,19)

Limitations

Data was collected by IFHP cluster staffs which might have created bias. Anthropometric measurement of children was not done to assess the Impact of improved feeding practice.

Recommendation

Counseling mothers on breast feeding and complementary feeding at different contacts using ENA and feeding demonstration at health facility and community level by health workers, health extension workers and health development army should continue to bring maximum effect in behavioral change. There is a need to integrate other nutritional activities, like, vitamin A, and zinc supplementation, iodization of salt and management of severe acute malnutrition (SAM). Measuring nutritional status of children will help to evaluate the contribution of behavioral change to improvement in their anthropometric measurement of children.

Conflict of interest

All authors declare that they have no conflict of interest

REFERENCES

1. Black ER, Victoria CG, Walker SP, Bhutta ZA, et al. Maternal and child under nutrition and overweight in low-income and middle-income countries,The Lancet maternal and child nutrition, June 2013,15-39
2. Haile M, TankouM, Ademola Olajide A, and Janet Byaruhanga J. The cost of hunger in Ethiopia; implications for growth and transformation of Ethiopia; Social and Economic Impacts of Child Under nutrition in Ethiopia, 2012
3. Lutter KE, Daelmans G, OnisKothari TM, Ruel MT,etal.Undernutrition,poor feeding practices, and low coverage of key nutrition interventions, Pediatrics, December 2011,volume 128/Issue 6
4. Ethiopian Demographic Health Survey, July 2012
5. Ethiopian Demographic Health Survey, July 2016
6. Bhutta ZA, Das JK, Rizvi A, Gaff MF, Walker N, et al. The Lancet Nutrition Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? The Lancet maternal and child nutrition, June 2013, 40-65
7. Ruel MT, Alderman H, Nutrition-sensitive interventions and programs: how can they help to accelerate progress in improving maternal and child nutrition? The Lancet maternal and child nutrition, June 2013, 66-81, 82-99
8. Gillespie S, Haddad L, Mannar V, Menon P, Nisbett N, The politics of reducing malnutrition: building commitment and accelerating progress, The Lancet maternal and child nutrition, June 2013, 82-99
9. Sunguya BF, Poudel KC,Mlunde LB, Shakaya P, UrassaDP, etal. Effectiveness of nutrition training of health workers toward improving caregivers' feeding practices for children aged six months to two years: a systematic review, Nutrition Journal 2013, 12:66 doi: 10.1186/1475-2891-12-66

10. Khan AZ, Rafique G, H, and Badruddin SH, Nutrition education intervention to combat undernutrition: experience from developing country, ISRN nutrition, published online 2013 February 5.
11. ckes SB, BagumaC,Brahe A, Myhre, JA, Bently ME, etal. Maternal participation in nutrition education program in Uganda is associated with improved infant and young child feeding practices and feeding knowledge: Post program comparison study, MMC nutrition, April 2017, 3: 32, published online
12. Kulawa KB, Verstracten R, Bouckaert KP, Mamiro PS, Lachal N, Effectivenessof nutrition education oackagein improving feeding practices, dietary adequacy, and growth of infants and young children in rural Tanzania: rationale, design, and methods of a cluster randomized trial, BMC public health; 2014:14; 1077, published online.
13. Guled RA, Mmat NM, Belachew T, AbubekerAM,Assefa N, Effect of nutrition intervention on knowledge, and practice of mothers/ care givers, on infant and young child feeding Shabelle (Goge) zone, Somali region, Eastern Ethiopia, Revelation and science volume 08, No.01 (1439H/2018), 50-59.
14. Alive and Thrive, infant and young child feeding project, impact evaluation, 2015
15. Trends in reproductive, maternal, newborn and child health care practices in 115 L10K woredas: Analyses of three rounds of survey data, July 2015
16. IFHP end line survey, October 2014
17. Guyon AB, Quinn VJ, Hainsworth M, Ravonimanantsoa P, RavelojoanaV,etalImplementing an integrated nutrition package at large scale in Madagascar: The Essential Nutrition Action Framework, *Food and Nutrition Bulletin,* vol. 30, no. 3 © 2009
18. Helen Keller international, implementing the ENA framework with homestead food Production: experience from Nepal 2008-2012, case study,onlineJnielsen@hki.org
19. Helen Keller international, Implementing ENA framework: Experience from Niger 2004-2009, case study, online Jnielsen@hki.org
20. Ethiopia, Demographic and Health Survey,September2005, and July 2019