Family Medicine & Medical Science Research

Daba and Ersado, Fam Med Med Sci Res 2015, 4:5
DOI: 10.4172/2327-4972.1000190

Research Article Open Access

Impact of Community Based Management of Acute Malnutrition Integrated Nutrition Education on Infant and Young Child Feeding Knowledge and Practice of Mothers or Caregivers in Dilla Zuria Woreda, Southern Ethiopia: A Quasi Experimental Study

Alemneh Kabeta Daba[1]* and Mastewal Erango Ersado[2]

[1]School of Nursing and Midwifery, Hawassa University, Hawassa, Ethiopia
[2]School of Nursing and Midwifery, Debre Berhan University, Debre Berhan, Ethiopia

Abstract

Background: Adequate nutrition during infancy and early childhood is fundamental to the growth, health and development of each child's to full human potential. Severe acute malnutrition(SAM) affects approximately 20 million children under five years of age, contributes to more than 1 million child deaths worldwide each year and being treated with community based management of acute malnutrition (CMAM) program. So that this study aimed of assessing the effect of CMAM integrated nutrition education on infant and young child feeding (IYCF) knowledge and practice of mothers/caregivers.

Method: A quasi experimental study design was employed on a total of 100 mother/caregivers and acutely malnourished child pairs enrolled in outpatient treatment program (OTP) of CMAM. A nutrition education intervention comprising 8 specific messages held twice a month for 6 continuous months. A pre-tested semi-structured questionnaire was used to collect three phase (Baseline, Follow-up and End line) data. Collected data entered to SPSS and descriptive statistics was computed. Paired t-test and independent sample t-test were used to check within and between group change on mean knowledge and practice score of mothers/caregivers.

Result: At the end of the intervention period mean knowledge score of mothers/caregivers was statistically significantly (p-value<0.001) improved within intervention group and between intervention and control group. At baseline (p-value=0.42) and follow up (p-value=0.44) between groups mean practice score of mothers/caregivers was not statistically significant different. Between group mean practice score comparison come up with statistically significant (p-value<0.001) difference. By the end of the study within group comparison for mean practice score showed significant difference both for intervention and control.

Conclusion: IYCF focused nutrition education improved knowledge and practice of mothers/caregivers of children on medical and nutrition treatment. Further study can be done with large sample size, longer intervention period and more strong design to check consistency of result. Since mothers'/caregivers' knowledge and practice of IYCF is crucial to sustain positive clinical outcomes of OTP management of acute malnutrition stakeholders better give due emphasis to mothers/care givers IYCF focused nutrition education in line with the clinical management.

Keywords: IYCF; CMAM; Nutrition education; Knowledge and practice

Abbreviations: SAM: Sever Acute Malnutrition; CMAM: Community Based Management of Sever Acute Malnutrition; IYCF: Infant and Young Child Feeding; OTP: Outpatient Treatment Program

Background

Nutrition and health are too interrelated. Feeding practices play a pivotal role in determining the optimal physical growth, development and health of infants and young children. Physical thrive and maintaining it, resisting and recovery from various illness and performing daily tasks lie on adequate nutrition [1]. Optimal infant and young child feeding, optimal breast feeding for the first six months of life and feasible and culturally acceptable complementary feeding on six months (180th day) and onwards, ensure infants' and young children's the best possible start to life [2,3]. Poor infant and young child feeding (IYCF) practices contribute to the high levels of child malnutrition [4,5]. World is suffering from the double burden of, under and over nutrition, of malnutrition [6]. Different forms of child under nutrition are prevalent in Ethiopia [7]. The golden age specific opportunity to prevent child nutritional deficits and improving child nutritional status is the first 24 months of life. The deficits acquired by this age are difficult to reverse later [8].

Devastating bad outcomes of infectious diseases like pneumonia, measles, AIDS and malaria children's under nutrition accounts for about 53% of under-five deaths [9,10]. Sever acute malnutrition (SAM) is the nastiest form of nutritional deficit affecting approximately 20 million under five years of age children and contributes to more than 1 million child deaths in the world each year, even in countries not recently affected by an emergency [11]. An estimated 32% of children less than 5 years of age in developing countries are stunted and 10% were wasted. Lack of appropriate breast feeding and complementary feeding practices are main causes of under nutrition [12]. International and adopted national clinical management protocols of SAM were developed to be implemented at health institutions and community

***Corresponding author:** Dr. Alemneh Kabeta Daba, School of Nursing and Midwifery, Hawassa University, Hawassa, Ethiopia, Tel: 0913885333; E-mail: alemneh33@gmail.com

Received October 19, 2015; **Accepted** November 28, 2015; **Published** November 30, 2015

Citation: Daba AK, Ersado ME (2015) Impact of Community Based Management of Acute Malnutrition Integrated Nutrition Education on Infant and Young Child Feeding Knowledge and Practice of Mothers or Caregivers in Dilla Zuria Woreda, Southern Ethiopia: A Quasi Experimental Study. Fam Med Med Sci Res 4: 190. doi:10.4172/2327-4972.1000190

level. Community based management of acute malnutrition (CMAM) is the program with which SAM cases are being managed. The CMAM program has four components: community/outreach mobilization, outpatient treatment program (OTP), inpatient treatment program and targeted supplementary feeding program (TSFP) [13,14]. Studies done to evaluate effect of nutrition education on mothers' knowledge and practice of IYCF did not specifically focus on mothers or caregivers of infants and young children with SAM being treated with OTP component of CMAM [15-17]. This study aimed to assess effect of OTP-CMAM integrated nutrition education on IYCF Knowledge and Practice of mothers/caregivers of infants and children with SAM in Dilla Zuria Wereda, Southern Ethiopia.

Methods

Study setting and design

This quasi-experimental study was conducted in Dilla Zuria Woreda, Gedeo Zone, Southern Ethiopia. Gedeo Zone lies between 50 and 70 North latitude and 380 and 400 East longitude, in the escarpments of the southeastern Ethiopian highlands overlooking the Rift Valley. Dilla Zuria Woreda is located about 86 kms from capital city of the region Hawassa and 360 kms away from capital of the country Addis Ababa. According to the 2007 Ethiopian Population and Housing Census total population of Dilla Zuria Woreda was estimated to be 130,433 [18]. There are 17 kebeles (smallest administrative units) in Dilla Zuria Wereda in which OTP-CMAM services was available.

Sample size and sampling procedure

From the 17 kebeles with OTP 9 kebeles (with high number of children aged 6-24 months enrolled in OTP) were purposively selected. One health center and 9 health posts with OTP were included in the study. Sample size was determined using formula for comparison of two proportions.

$$N = n_1 + n_2 = \frac{4(Z_{0.975} + Z_{1-\beta})^2 \left[\left(\frac{P_1 + P_2}{2}\right)\left(1 - \frac{P_1 + P_2}{2}\right)\right]}{(d = P_1 - P_2)^2}$$

Where: n= sample size in each group, $Z_{0.975}$=1.96 for 95% CI, $Z_{1-\beta}$= 0.842 for 80% power, P_1= proportion in the intervention group, P_2= proportion of introduction of solid, semi-solid or soft drink in control group, P= average of P_1 and P_2, d=P_2-P_1= minimum meaningful difference in IYCF knowledge and practice between intervention and control groups.

P_2=0.5, since no similar surveys have been conducted in the targeted study area concerning nutrition education and improvement in the recommended IYCF practices for the baseline survey, we therefore used 0.5

P1=0.775, since no similar surveys have been conducted in the targeted study area concerning nutrition education and improvement in the recommended IYCF knowledge, practices for the baseline survey, we therefore used 55 % as an effect size.

Nf= n1+n2=96 + 9.6= 105.6≈106 children for both groups. So that each group comprised of 53 children- mother (caregiver) pairs.

At time of starting the study there were only 100 children aged 6-24 months who were enrolled in the OTP component of the CMAM, who were in the program for less than 45 days so we included all children aged 6-24 months in the study. The distance between the intervention and the control kebeles was 20 kms away from each other. After selecting and categorizing the health posts in two groups, the health posts were randomly assigned into the intervention and control group (Figure 1).

Method of nutrition education

Before letting mothers and caregivers attend the nutrition education sessions, two main activities were accomplished. First key informant interview was conducted with selected mothers and health extension workers to assess the existing knowledge and practice both in intervention and control groups. Second, the principal investigator selected nutrition educators and gave intensive training using training material of IYCF developed by Alive and Thrive and ministry of health-Ethiopia giving due emphasis to Ethiopian National Strategy for infant and young child feeding recommendations. The IYCF key messages were optimal breast feeding, verity/diet diversity, feeding frequency, food consistency, feeding amount, food hygiene, feeding sick child and responsive feeding [19,20]. Then groups of mothers/caregivers were given education in their respective kebele on every 15 days for

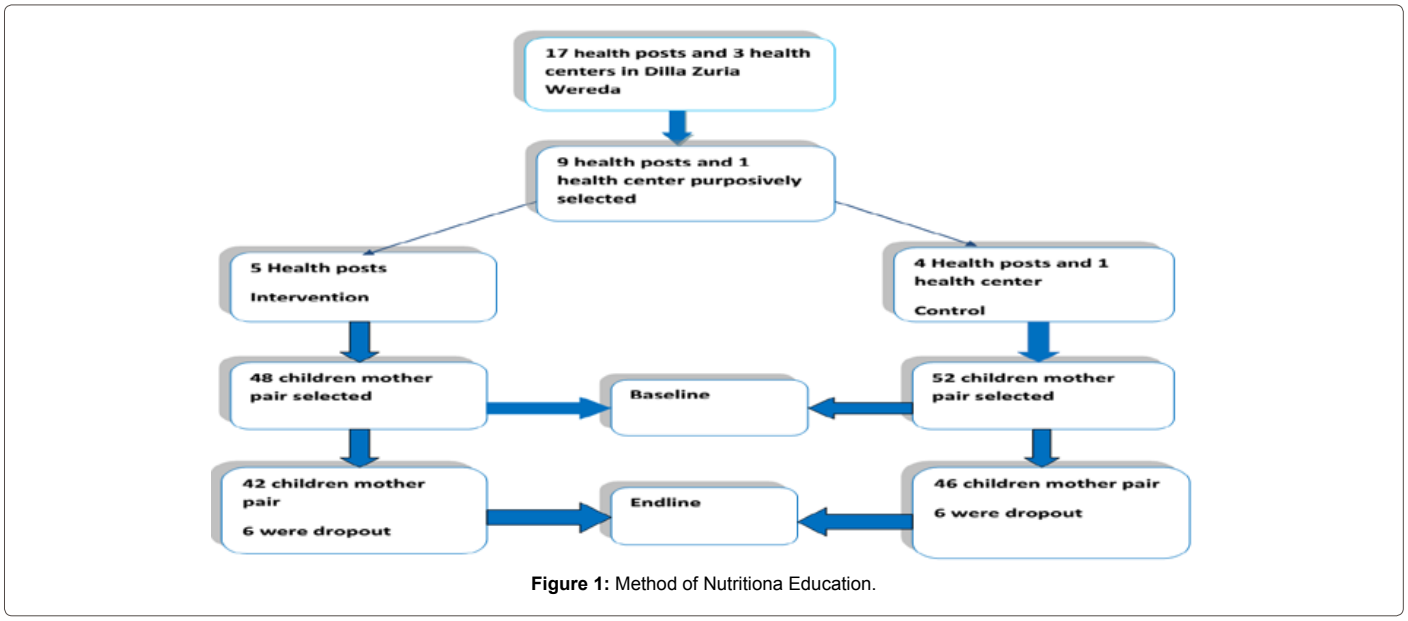


Figure 1: Method of Nutritiona Education.

6 continuous months using poster and pictures developed by similar organization and demonstration. Practical sessions were also organized to increase the ability of mothers to appropriately feed their children with the locally available foods. Mothers were advised to allocate a separate feeding pot for child. After the end of the data collection period the same nutrition education was given to the control group.

Data collection and analysis

A pre-tested semi-structured questionnaire was used to assess the knowledge and practice of mothers/caregivers including appropriate indicators for the specific age groups. The English version of the questionnaire was translated into Gedeuffa and Amharic (local languages) and retranslated to English to check consistency between different language versions.

The already collected data was routinely checked for completeness and inconsistencies, cleaned, coded and then entered into SPSS version 20. Descriptive statistics was generated. Paired t-test and independent sample t-test were used to check statistical significance of the difference in mean knowledge and practice score within and between groups. All tests were two-sided and p-value <0.05 were considered statistically significant.

Ethical consideration

Ethical clearance was obtained from Hawassa University College of Medicine and Health Sciences Institutional Review Board. Official letter of cooperation request were submitted to the respective health institutions. The purpose and importance of the study were explained and consent was secured from each participant. Confidentiality was maintained at all levels of the study. Participant involvement was solely voluntary and those who were unwilling and need to quit their participation in between were informed of the right to do so.

Result

Participation rate

A total of 100 child-mother/caretaker pairs were recruited and included in the study. Of these, 48 were in the intervention and 52 in the control group. At baseline knowledge and practice of mothers on IYCF was assessed both in intervention and control group before first nutrition education session. On average mothers attended 8 of the 12 educational sessions conducted during the intervention period.

Socio-demographic characteristics

A total of 100 dyads, children aged 6-24 months, were included in the trial, of whom 50 (50%) children were girls. The mean [±SD] age (in years) of mothers/caregivers was 29.69 ± 6.29 (Table 1).

Wealth index of mothers/caregivers was computed using Principal Component Analysis (PCA) and categorized as low, middle and high. The overall wealth index of mothers/caregivers was 33 (33%), 34 (34%) and 33 (33%) for low, middle and high respectively. There was no significant differences among the group at base line (P=0.22) (Table 2).

Indexed children were in the age range of 6-24 months: seven from each of control and intervention group age ranging from 6-8 months, 14 and 12 were within the age range of 9-11 and 31and 29 were within the age range of 12-24 months respectively for control and intervention group.

Knowledge and practice on complementary feeding

Knowledge of mothers (caregivers) both from intervention and control group on complementary feeding was assessed. Overall, 78

Characteristics		Group		P-value
		Intervention	Control	
		N (%)	N (%)	
A person in charge of caring for the child	Mother	43(89.6)	51(98.1)	0.81
	Sister	1(2.1)	-	
	Grand Parents	3(16.2)	1(1.9)	
	Others	1(2.1)	-	
Mother's/Care giver's age in Years	20-24	2(4.2)	5(9.6)	0.55
	25-29	28(58.3)	19(36.5)	
	30-34	13(27.1)	21(40.4)	
	35-39	1(2.1)	4(7.7)	
	≥40	4(8.3)	3(5.8)	
Religion	Orthodox	12(25)	17(32.7)	0.01*
	Protestant	27(56.2)	33(63.5)	
	Catholic	1(2.1)	1(1.9)	
	Others	8(16.7)	1(1.9)	
Ethnicity	Gedeo	28(58.3)	38(73.1)	0.38
	Sidama	16(33.3)	9(17.3)	
	Guraghe	1(2.1)	2(3.8)	
	Amhara	1(2.1)	-	
	Others	2(4.2)	3(5.8)	
Occupation	Student	1(2.1)		0.58
	Employed	-	3(5.8)	
	Housewife	44(91.7)	46(88.5)	
	Others	3(6.2)	3(5.8)	
Educational Status of caregiver/mother	No School	37(77.1)	36(69.2)	0.12
	Informal Education	9(18.8)	11(21.2)	
	Primary(1-6)	2(4.2)	2(3.8)	
	Higher(>12)	-	2(3.8)	
	Other	-	1(1.9)	
Mothers' Radio Listening status	Yes	12(25)	24(46.2)	0.02*
	No	36(75)	28(53.8)	
Mothers' Television watching Status	Yes	-	3(5.8)	0.09
	No	48(100)	49(94.2)	

*P-value<0.05 statistically significant

Table 1: Background characteristics of both intervention and control group, Dilla Zuria Woreda, Southern Ethiopia, 2013.

Household Characteristics		Group		P-Value
		Intervention	Control	
		N (%)	N (%)	
Head of the Household	Mother	5(10.4)	5(9.6)	0.44
	Father	40(83.3)	47(90.4)	
	Other	3(6.2)	-	
Household size	<5	19(39.6)	16(30.8)	0.52
	≥5	29(60.4)	36(69.2)	
Meal priority given to:	Men	43(89.6)	49(94.2)	0.21
	Women	1(2.1)	1(1.9)	
	Young Children	1(2.1)	2(3.8)	
	Other	3(6.2)	-	
Water Source	Safe	34(70.83)	25(48.1)	0.04*
	Unsafe	14(29.16)	27(51.9)	
Houses wall made of:	Wood and mud	47(97.9)	50(96.2)	0.61

	Bricks	1(2.1)	-	
	Breed and Bamboo		2(3.8)	
House roof made of:	Iron Sheet	19(39.6)	23(44.2)	0.3
	Thatch or Grass	28(58.3)	29(55.8)	
	Other	1(2.1)	-	
House Floor	Earth	47(97.9)	51(98.1)	0.69
	wooden	-	1(1.9)	
	Other	1(2.1)	-	
Source of income	Trade	5(10.4)	3(5.8)	0.19
	Farming	21(43.8)	36(69.2)	
	Wedge	18(37.5)	10(19.2)	
	Government work	2(4.2)	2(3.8)	
	Other	2(4.2)	1(1.9)	
Type of latrine	Traditional pit latrine	48(100)	50(96.2)	0.17
	No latrine	-	2(3.8)	
Number of under-five children	≤2	44(91.6)	45(86.5)	0.09
	>2	4(8.4)	7(13.5)	

*P-value<0.05 statistically significant

Table 2: Household characteristics of study population both in intervention and control group, Dilla Zuria Wereda, Southern Ethiopia, 2013.

(78%) mothers/caregivers received advice on complementary feeding. Among those, 78(78%), who received advise on complementary feeding, 67 (85.9%) & 11 (14.1%) received counseling from health extension workers and health center respectively. Moreover, 96 (96%) of mothers/caregivers knew the need of breast feed during complementary feeding period. From these mothers 39 (40.6 %) of them knew that breast milk is with important nutrients (Table 3).

Almost all, 99 (99%), children already started complementary feeding. Of these 73 (73.7%) of children started complementary feeding at the age of 6 month while 10 (10.1%) of children started complementary feeding at the age of 7 month and above. Sixty four (64.6 %) of children are given gruel at the first time while 20 (20.2%) and 11 (11.1%) of children are given cow's milk and soft porridge respectively at the first time when they start complementary feeding (Table 4).

Comparison of knowledge and practice score

The overall mean score for knowledge and practice on IYCF is depicted on figure 1 and 2. In general, there was an increase in the mean knowledge and practice score related to IYC among the intervention group throughout the study period. In intervention group knowledge improved from 5.39 ± 2.22 to 7.80 ± 1.54 while practice improved from 8.27 ± 1.08 to 9.66 ± 0.95 (Figure 2).

Whereas in control group, the mean knowledge score changed from 5.71 ± 1.74 to 5.82 ± 1.80 and practice from 8.44 ± 1.05 to 8.95 ± 0.86 related to complementary feeding. Comparison of mean knowledge and practice score for the control group shows no change through baseline to end line (Figure 3).

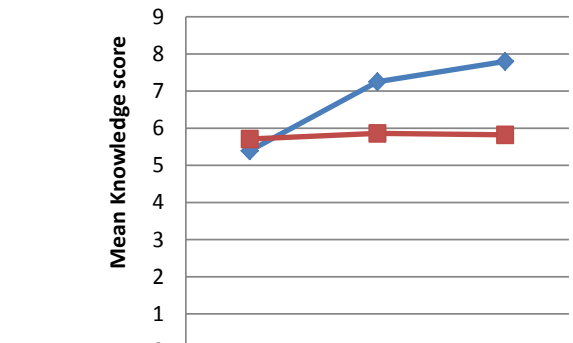
At baseline between group IYCF mean knowledge score was not

Variable	Baseline		Follow up		End line	
	Intervention	Control	Intervention	Control	Intervention	Control
	N=48	N=52	N=44	N=46	N=42	N= 46
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Get advise	33(68.8)	45(86.5)	41(93.2)	43(93.5)	40(95.2)	43(93.5)
Age to start complementary feeding	44(91.7)	45(86.5)	43(97.7)	39(84.8)	41(97.6)	40(87)
First additional food	2(4.2)	12(23.1)	38(86.4)	13(28.3)	40(95.2)	13(28.3)
Frequency from 6-8 months	29(60.4)	37(71.1)	30(68.2)	30(65.2)	32(76.2)	31(67.4)
Frequency 9-11 months	21(43.7)	22(42.3)	22(50)	15(32.6)	28(66.6)	15(32.6)
Frequency from 12-2 months	24(50)	24(46.1)	29(65.9)	18(39.1)	30(71.4)	23(50)
Breast feeding	45(93.8)	51(98.1)	42(95.5)	44(95.7)	42(100)	43(93.5)
Know food group	39(81.2)	45(86.5)	44(100)	43(93.5)	41(97.6)	45(97.8)
Listed at least four food groups	23(58.9)	16(35.5)	31(70.5)	23(53.5)	34(82.9)	15(33.3)

Table 3: Mothers knowledge on various complementary feeding messages both in intervention and control groups, Dilla Zuria Wereda, Southern Ethiopia.

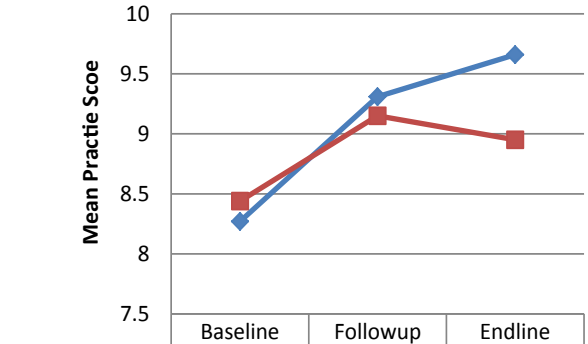
Variable	Baseline		Follow up		End line	
	Intervention	Control	Intervention	Control	Intervention	Control
	N=48	N=52	N=44	N=46	N=42	N= 46
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Breast feeding currently	42(87.5)	50(96.2)	37(84.1)	44(95.7)	35(83.3)	45(97.8)
Bottle feeding	5(10.4)	6(11.5)	3(6.8)	4(8.7)	4(9.5)	5(10.9)
Complementary feeding currently	48(100)	51(98.1)	44(100)	46(100)	42(100)	46(100)
At least four groups used	-	1(1.9)	9(20.5)	6(13)	14(35.7)	4(8.6)
Hand washing before preparing	48(100)	52(100)	44(100)	46(100)	42(100)	46(100)
Hand washing before feeding	48(100)	52(100)	44(100)	46(100)	42(100)	46(100)
Hand washing after defecation	48(100)	52(100)	44(100)	46(100)	42(100)	46(100)
Frequency of feeding for 12-24 months	26(54.1)	30(58.8)	34(77.2)	30(65.2)	32(76.2)	21(45.6)
Consistency	37(77.1)	42(80.8)	41(93.2)	44(95.7)	41(97.6)	42(91.3)
Snack	20(41.7)	28(53.8)	32(72.7)	27(58.7)	39(92.9)	30(65.2)
Responsive feeding	44(91.6)	49(94.2)	44(100)	46(100)	42(100)	45(97.8)

Table 4: Mothers complementary feeding practice both in intervention and control group, Dilla Zuria Wereda, Southern Ethiopia, 2013.



	Base line	Follow up	End line
Intervention	5.39	7.25	7.8
Control	5.71	5.86	5.82

Figure 2: Mean knowledge score of study population both from intervention and control group through the study period, Dilla Zuria Wereda, Sothern Ethiopia, 2013.



	Baseline	Followup	Endline
Intervention	8.27	9.31	9.66
Control	8.44	9.15	8.95

Figure 3: Mothers' mean practice score on complementary feeding over study period both in intervention and control group, Dilla Zuria Wereda, Southern Ethiopia, 2013.

statistically significant (p-value=0.43) different. There was a highly significant (p-value<0.001) difference at follow up and end of the intervention between the two groups. Within intervention group mean knowledge score comparison resulted with significant (p-value<0.001) difference. Being in the intervention group significantly (p-value=0.034) increased the knowledge score by factor 0.82, listening to radio significantly (p-value=0.035) increased the knowledge score by factor 1.405 and owning a vegetable garden significantly (p-value=0.035) increased by factor 1.370 (Table 5).

As it is shown in table 3 below there was no statistically significant different mean practice score between the two groups at base line (p-value=0.42) and follow up (p.value=0.44) while there was a statistically significant(p-value<0.001) result at the end of the intervention (P<0.001) between the two groups (Table 6).

Discussion

In this study, it was tried to improve IYCF knowledge and practice of mothers/caregivers of children aged 6-24 months in CMAM. The intervention demonstrated a significant change in the IYCF knowledge of mothers/caregivers. The mean knowledge score became statistically significantly different within and between groups at the end of the intervention. This could be because the long intervention period which was enough to grab the eight key messages and mothers' attendance, more than half of the mothers attended more than the mean of sessions in the intervention period. Similar result was observed in intervention trial focusing on different IYCF messages. Educational intervention study which was conducted in Brazil showed that the nutrition education focusing on complementary feeding was given in health centers that were selected for the delivery. During the home interview conducted 8 days after consultation, more than half of mothers from the intervention group and below half of mothers from the control group recalled nutritional advice they received. Mothers in the intervention group were significantly more likely to recall complementary feeding messages that they discussed with their care provider than those in the control group [21]. A one year educational intervention in rural China also showed similar result [22]. An educational intervention through health care system in Peru [16] also comes up with a significant increment with respect to caregivers' knowledge of age-specific feeding practices.

At the end of teaching session IYCF practice of mothers/caregivers was statistically significantly different within and between groups. Even though there is difference in study participants, setting and duration of intervention the finding is similar to finding from India [23] in which more mothers in the intervention group fed their children responsively than the control. A study from Peru which focused on offering thick food and incorporation of animal protein for 6 months and above children [16] reported that practices differed between groups. From the 24-hr dietary recall, consumption of thick food first was significantly greater in the intervention group than in the control

Mean knowledge score comparison between groups			
	Group		
	Intervention	**Control**	**P-Value**
Baseline	5.39	5.71	0.43
Follow up	7.25	5.86	<0.001*
End line	7.8	5.82	<0.001*
Mean knowledge score comparison within group			
	Intervention	Control	
Base line	5.14	5.91	
End line	7.8	5.82	
P-value	<0.001*	0.72	

*p-value<0.05 statistically significant

Table 5: Between and within group mean knowledge score comparison of study population, Dilla Zuria Wereda, Southern Ethiopia, 2013.

Between group mean practice score comparison			
	Group		
	Intervention	**Control**	**P-Value**
Baseline	8.27	8.44	0.42
Follow up	9.31	9.15	0.44
End line	9.66	8.95	<0.001*
Within group mean practice score comparison			
	Intervention	Control	
Baseline	8.16	8.47	
End line	9.66	8.95	
P-value	<0.001*	<0.001*	

*p-value<0.05 statistically significant

Table 6: Between and within group mean practice score of study population, Dilla Zuria Wereda, Southern.

group. A significantly higher proportion of children in the intervention group received chicken liver, fish, or egg than did controls at age 6 months and 8 months. But in this study the consumption of meat and meat product was zilch at baseline and end line of the study both in the intervention and control group. The consumption of egg and milk was higher in the intervention group than the control group. In agreement to studies from rural India and Bangladesh [17-23] feeding frequency of children in intervention group was increased. Study in rural China showed overall improvement of complementary feeding practices for the intervention group: children in the intervention group had more meals (semi-solid or solid foods) per day than did their counterparts at 6, 9 and 12 months, more mothers in the intervention group reported that they washed their own and their children's hands before meals than did mothers in the control group, children and encouraged children to eat when they refused food [15]. In contrast in this study all mothers in the intervention as well as in the control group washed their own hands before preparing the complementary food, before feeding and after defecation.

Conclusion

By the end of the nutrition education intervention mothers'/caregivers' knowledge on IYCF was improved as compared to their startup and also become significantly higher in the intervention group. Mothers'/caregivers' practice on IYCF was improved for both groups and difference was observed between the intervention and control group. Conducting related investigation with large sample size, longer intervention period and more strong study design could facilitate checking stability of change on IYCF knowledge and practice made. As knowledge and its practice are key for better outcome of conducts stake holders better focus on IYCF oriented nutrition education to aid sustainability of positive nutritional and clinical outcomes of management of acute malnutrition.

Acknowledgements

The authors would lie to acknowledge Hawassa University, ENGINE project, Dilla Zuria Woreda Health Office, nutrition educators, data collectors and participants of the study.

References

1. Early Warning Department Disaster Prevention and Preparedness Commission [Ethiopia] (2002) Guideline on Emergency Nutrition Assessment. Addis Ababa, Ethiopia.
2. UNICEF and WHO. Global Strategy: Breastfeeding critical for child survival. Available at: http://www.who.int/mediacentre/news/releases/2004/pr19/en/index.html (date Accessed June 25, 2012) 2004. WHO. Infant and young child feeding: Available at http://www.who.int/mediacentre/factsheets/fs342/en/. 2015
3. Saha KK, Frongillo EA, Alam DS, Arifeen SE, Persson LA, et al. (2008) Appropriate infant feeding practices result in better growth of infants and young children in rural Bangladesh. Am J Clin Nutr 87: 1852-1859.
4. Disha AD, Rawat R, Subandoro A, Menon P, et al. (2012) Infant and young child feeding (IYCF) practices in Ethiopia and Zambia and their association with child nutrition: Analysis of demographic and health survey data. Afr J Food Agric Nutr Dev 12: 5895â€“914
5. McGuire S (2015) International Food Policy Research Institute. 2014. Washington, DC: Global Nutrition Report 2014: actions and accountability to accelerate the world's progress on nutrition. Adv Nutr 6: 278-279.
6. Central Statistical Agency [Ethiopia] and ICF International (2012) Ethiopia Demographic and Health Survey 2011. Central Statistical Agency and ICF International. Addis Ababa, Ethiopia and Calverton, Maryland, USA
7. The 1,000 Days Effort to Reduce Child Undernutrition. Available at www.thousanddays.org.
8. UNICEF Statistics. Progress for children: a child survival report card. Available at: http://www.cdc.gov/malaria/impact/index.htm. 2006.
9. Bryce, Boschi-Pinto C, Shibuya K, Black RE; WHO Child Health Epidemiology Reference Group (2005) WHO estimates of the causes of death in children. Lancet 365: 1147-1152.
10. Levels and Trends in Child Malnutrition: (2012) UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates.
11. Daelmans B, Mangasaryan N, Martines J, Saadeh R, Casanovas C, et al. (2009) Strengthening actions to improve feeding of infants and young children 6 to 23 months of age: summary of a recent World Health Organization/UNICEF technical meeting, Geneva, 6-9 October 2008. Food Nutr Bull 30: S236-238.
12. WHO/WFP, (2010) Community Based Management of Severe Acute Malnutrition: A Joint Statement by the World Health Organization, the World Food program, the United Nations System Standing Committee on Nutrition and the United Nations Childrenâ€™s Fund 2007.
13. Federal Ministry of Health [Ethiopia]. Protocol for the management of Sever Acute Malnutrition. 2007.
14. Ling S, Jingxu Z, Yan W, Laura C, Bernard G, (2009) Effectiveness of an educational intervention on Complementary Feeding practices and growth in rural China; a cluster randomized controlled trial. Public Health Nutrition 13: 556-565.
15. Penny ME, Creed-Kanashiro HM, Robert RC, Narro MR, Caulfield LE, et al. (2005) Effectiveness of an educational intervention delivered through the health services to improve nutrition in young children: a cluster-randomized controlled trial. Lancet 365: 1863-1872.
16. Roy SK, Fuchs GJ, Zeba M, Gulshan A, Sumaya I, et al. (2005) Intensive Nutrition Education with or without supplementary feeding improves the Nutritional status of moderately malnourished children in Bangladesh. Journal of Health population Nutrition. 2005;23(4): 320-330.
17. Central Statistical Agency (CSA) [Ethiopia]. The 2007 population and Housing Census of Ethiopia. Statistical Summary Report at National Level, Addis Ababa, Ethiopia: Available at http://ecastats.uneca.org/aicmd/Portals/0/Cen2007_firstdraft.pdf 2008.
18. Ministry of Health [Ethiopia]. Complementary Feeding of Children 6 up to 24 Months Old. For IYCF Trainers and Promoters 2012.
19. Ministry of Health, Family Health Department [Ethiopia]. National strategy for infant and young child feeding 2004.
20. Santos I, Victora CG, Martines J, Gonçalves H, Gigante DP, et al. (2001) Nutrition counseling increases weight gain among Brazilian children. J Nutr 131: 2866-2873.
21. Guldan GS, Fan HC, Ma X, Ni ZZ, Xiang X, et al. (2000) Culturally Appropriate Nutrition Education Improves Infant Feeding and Growth in Rural Sichuan, China. Journal of Nutrition 130: 1204-1211.
22. Bhandari N, Mazumder S, Bahl R, Martines J, Black R.E et al. (2004) An Educational Intervention to Promote Appropriate Complementary Feeding Practices and Physical Growth in Infants and Young Children in Rural Haryana, India. J. Nutr 134: 2342-2348.
23. Kilaru A, Griffiths PL, Ganapathy S, Ghosh S (2005) Community-based nutrition education for improving infant growth in rural Karnataka. Indian Pediatr 42: 425-432.