



## Effect of health education program on the knowledge, attitude and practice of caregivers regarding infants care in Maygoma Orphanage Center, Khartoum state, Sudan (2016-2017)

<sup>1</sup> Dr. Huda Hassabelrasool Abedelwahed, <sup>2</sup> Magda Elhadi Ahmed Yousif, <sup>3</sup> Ali Babiker Ali Habour, <sup>\*4</sup> Maha Gibreel Mohammed Khaier

<sup>1</sup> M.Sc. in mother and child health Nursing, Khartoum University, Department of mother and child health Nursing, Faculty of Applied Medical Sciences, Nursing department, Jazan University Kingdom of Saudi Arabia

<sup>2</sup> Associate professor, Department of Community Medicine, Faculty of Medicine, University of Gezira, Madani, Sudan.

<sup>3</sup> Professor, MBBS Khartoum, DCH, DTCH, MRCP, Dean Faculty of Medicine, University of Gezira, Madani, Sudan

<sup>4</sup> Lectural of Community Nursing, Faculty of Nursing, University of Medical Scinces and Technoloy, Khartoum, Sudan

### Abstract

**Background:** Young children in institutional care have often been abandoned at birth or soon after because of illegitimate pregnancies or parental instability. Orphaned, abandoned, and maltreated children pose problems for societies throughout the World. Although the actual number of children in residential institutions is impossible to gauge accurately, estimates have ranged from 2,000,000 to more than 8,000,000 (Browne, 2009; Save the Children, 2009). Most institutions are staffed with caregivers who work rotating shifts in rather bleak material conditions. The children those most at risk for malnutrition and hunger-related diseases, in particular orphaned or abandoned children living in care centers, many of whom have significant special needs. The aim of the study: the study aimed to evaluate the effect of health educational program on the knowledge, attitude and practice of care givers regarding infants care in Maygoma Orphanage center. This a center for abandoned children in Khartoum. Material and methods: An Intervention study, conducted in Mygoma orphanage center in Khartoum state from (2016-2017). The total coverage method used to lay down the sample which reaches (50) caregivers. Data was collected by using a questionnaire (to measure the knowledge) and checklist (to measure the practice) and was analyzed by using Statistical Packages for Social Sciences (SPSS version 20).

**Results:** The study showed, significant differences ( $P < 0.05$ ) found in knowledge of care givers between the pre and post health education program. About (58%) of caregivers displayed correct answers regarding the bottle preparation before attending the program, while after the program (82%) of them displayed it correctly. Regarding the time for giving feeding formula to infants, (46%) of care givers gave correct answers before attending the program, in contrast, after the program (94%) of them gave correct answers.

(88% )of the care givers answered correctly about how to start bottle feeding before attending the program, while (98%) of them answered correctly after attending the program. Regarding the time for introducing food to infants with Formula, (82 %) of the care givers gave correct answers before attending the program, while all of them (100%) mentioned correctly after the program. Moreover, studying knowledge of caregivers regarding the reasons of infant crying showed (76 %) of them answered correctly before program, while after program (98%) of them mentioned correctly. Also the study showed, significant differences found ( $P < 0.05$ ) in practical skills of caregivers between pre and post health education program. Most of care givers (80%) after program did correct practices related to infants Dipper changing, while before study program (52%) of care givers did correct practices. Before the program (54%) of care givers did infants bathing correctly, but after program most of them (70%) did it in right way.

**Conclusion:** The study concluded that health educational program had a significant impact related to the improvement of the caregiver's knowledge and practical skills post application of the program.

**Recommendation:** The study recommended, increase the number of care givers to meet the number of infants, create a Supervisory system to ensure best practice, increase the resources, encourage training and continuous educational programs to caregiver.

**Keywords:** infants, caregivers, formula, correct practices, dipper changing, infants bathing

### 1. Introduction

Young children in institutional care have often been abandoned at birth or soon after because of illegitimate pregnancies or parental instability. Orphaned, abandoned, and maltreated children pose problems for societies throughout the world. Although the actual number of children in residential

institutions is impossible to gauge accurately, estimates have ranged from 2,000,000 to more than 8,000,000 (Browne, 2009; Save the Children, 2009). Most institutions are staffed with caregivers who work rotating shifts in rather bleak material conditions.

The children those most at risk for malnutrition and hunger-

related diseases, in particular orphaned or abandoned children living in care centers, many of whom have significant special needs 2. The quality of care giving relationships has an impact on children's health and development. These effects occur because children, whose care is less than adequate or whose care is disrupted in some way, may not receive sufficient nutrition; they may be subjected to stress; they may be physically abused and neglected; they may develop malnutrition; they may not grow well; and early signs of illness may not be detected. Research on what occurs when young children are placed in institutions provides powerful evidence of the importance of supportive and stable caregiver-child relationships for the health of young children and their cognitive and social development. Young children in group care often fail to thrive, they tend to be sickly, they are demanding of attention, and they find it difficult to have normal peer relationships with other children 3. UNICEF estimated that over 17.8 million Children without appropriate care those are orphans 4. High number of babies abandoned: based on research undertaken in 2003, evidence indicated that an average of 110 new born babies were being abandoned in Khartoum every month. Half were estimated to die before receiving any assistance while those who survived abandonment were admitted to a state orphanage, Maygoma, where mortality rates stood at over 80 per cent. Research suggested that the majority of abandoned babies were born outside marriage. Stigma associated with bearing a child out of wedlock, and concerns about possible action by the authorities led many mothers to abandon babies on the streets, without seeking professional care for their child 5.

## 2. Materials and Methods

The Materials and Methods begins by presenting the research design, followed by setting and duration of the study, sample, sample size, data collection technique and tools, phases of the study, validity and reliability of instruments and ethical considerations.

**2.1. Study design:** An interventional prospective research design was used to accomplish this study.

**2.2 Setting:** Mygoma Orphanage center, Khartoum State, Sudan.

**2.3 Sample:** Care givers they were taking care of children less than one year.

**2.4 Sample size:** The recommended sample size given by the total coverage of caregivers (72) who were taking care of infant (196), but there are (22) of care givers included in the pretest phase and excluded in the post test they refused to field the posttest questioner. After that the sample size reaches (50) care givers taking care of infant (138).

**2.5 Data collection technique and tools:** Two tools used to collect the needed data to achieve the aim of the study, they were: Structured Interview questionnaire to assess the caregivers knowledge regarding infant care in Maygoma center. The tool developed by researcher after reviewing by her supervisor. Observational Checklist it was developed by the researcher to assess the caregivers performance regarding daily infant care in maygoma center.

### 2.6 Phases of the Study

**2.6.1 Pre Intervention Phase:** Baseline survey was conducted.

**2.6.2 Intervention Phase:** Started from (May-August, 2016), which included two lectures for three hours. The demonstration role play was used in the practical station for 6 hours in which application of care steps was applied; a total of 50 caregivers were trained.

**2.6.3 Post Intervention Monitoring:** Monitoring and supervision were carried out monthly for 6 months after the intervention to assess application of care by the same data collector.

**2.7 Ethical consideration:** An official letter was taken from the Gezira University to approach the directors of the almaygoma center for permission to conduct the study.

## Results

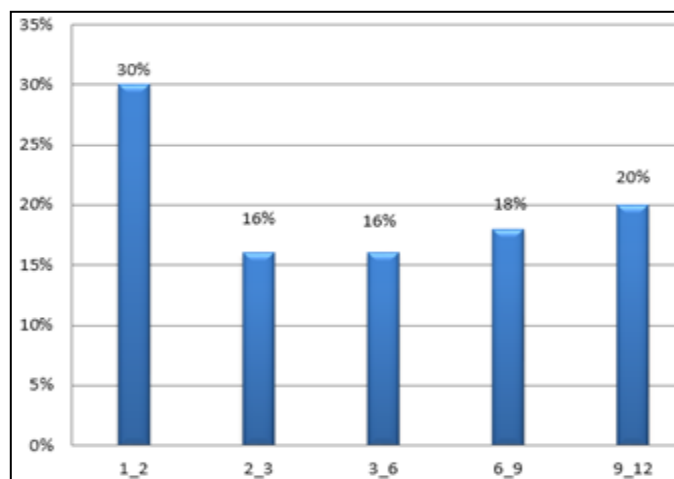


Fig 1: Age distribution of infants in Maygoma center (n=196)

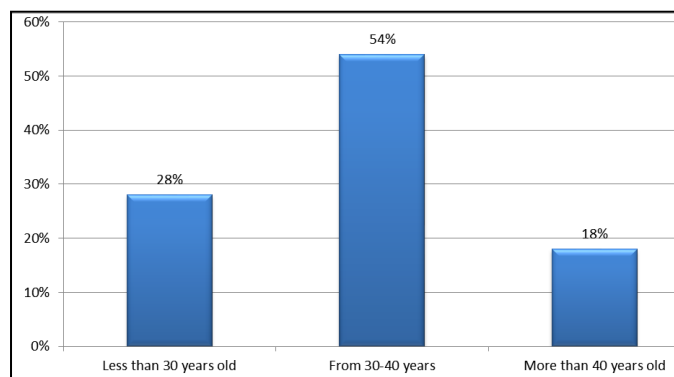


Fig 2: Distribution of study sample by Care givers age (n=50)

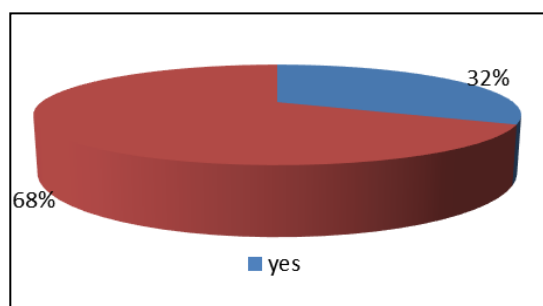


Fig 3: Distribution of study sample by care givers who are Marriage and they have an infant's (n=50):

The children age ranged between (1-12) month, about (30%) of age range between (1-2) month. figure (1). Care givers Age who taking care of infants more than half (54%) of these Care givers range between 30-40 yrs. figure (2). The majority (68%) of care givers who are marriage they have an infant's figure (3)

A significant differences were found in knowledge of care givers between the pretest and posttest ( $P < 0.05$ ) regarding Knowledge of the care givers about preparation of bottles before infants feeding. before the education program, about (58%) of the care givers knew the preparing the bottles perfectly, while (42)they didn't know, however after the education program There was an improvement in the knowledge of care givers regarding preparing bottles, about (82%) of the care givers knew, while (18%)they did not know. (table1),

**Table 1:** Knowledge of the care givers regarding preparation of bottles before infants feeding: n (50)

	Pre		Post	
	No	%	No	%
Know	29	58%	41	82%
Don't know	21	42%	9	18%
Total	50	100%	50	100%

P-value = 0.00 Pearson Chi-Square = 15.9

About Time for giving feeding formula to infants (There was an improvement in the knowledge of care givers regarding the time for feeding formula to infant's, before the education program, about (46%) of the care givers knew the feeding time, while (54 %) they did not know, as for after the education program most of the study group ninety four (94%) knew the time of feeding, while (6%) percent they did not know (table2)

**Table 2:** Knowledge of the care givers regarding the time for giving feeding formula to infant's n (50)

	Pre		Post	
	No	%	No	%
Know	23	46%	47	94%
Don't know	27	54%	3	6%
Total	50	100%	50	100%

P-value = 0.00 Pearson Chi-Square = 28.0

about begin at initiation of infant bottle feeding (88 % of the care givers gave correct answer about the begin at initiation of infant bottle feeding before attendance of the program, while, correct answer was mentioned by 98% of them after attendance) (table3)

**Table 3:** Knowledge of the care givers regarding first step of bottle feeding: n (50)

	Pre		Post	
	No	%	No	%
Know	44	88%	49	98%
Don't know	6	12%	1	2%
Total	50	100%	50	100%

P-value = 0.02 Pearson Chi-Square = 7.26

About the age for giving Foods Other Than Formula to infant

about (82%) of care givers they knew when they giving Foods Other Than Formula to infant and (18%) of care givers they didn't know, however after the program the whole sample (100%) they knew.(table4),

**Table 4:** Knowledge of the care givers regarding the time for introducing Foods to infant with Formula: n (50)

	Pre		Post	
	No	%	No	%
Know	41	82%	50	100%
Don't know	9	18%	0	0%
Total	50	100%	50	100%

P-value=0.001 Pearson Chi-Square = 9.8

Also about the age of weaning baby from the bottle(about (62%) of care givers they knew when they wean the baby from the bottle, however (38%) they didn't know, as for after the education program most of the study group ninety (90%) they knew when they wean the baby from the bottle, (10%) percent they didn't know ) (table 5)

**Table 5:** Knowledge of the care givers regarding: The age of weaning the baby from the bottle: n (50)

	Pre		Post	
	No	%	No	%
Know	31	62%	45	90%
Don't know	19	38%	5	10%
Total	50	100%	50	100%

P-value = 0.005 Pearson Chi-Square = 10.8

The reason of infant crying ((76%) of care givers they knew Why the infant cries without appear reason, however about (24%) they did not know, as for after the education program most of the study group (98%) they knew The reason of infant crying and two (2%) they didn't know (table6)

**Table 6:** Knowledge of the care givers regarding: The reason of infant crying n: 50

	Pre		Post	
	No	%	No	%
Know	38	76%	49	98%
Don't know	12	24%	1	2%
Total	50	100%	50	100%

P-value = 0.004 Pearson Chi-Square = 11.19

The best sleeping position to infants(the best sleeping position to infants)about four (4%) percent of care givers they knew the best sleeping position to infants) and (96%) of care givers they didn't know, as for after the education program (76%) of the study group they knew the best sleeping position to infants and (24%) percent they did not knew) (table7)

**Table 7:** Knowledge of the care givers regarding (the best sleeping position to infants)n:50

	Pre		Post	
	No	%	No	%
Know	2	4%	12	76%
Don't know	48	96%	38	24%
Total	50	100%	50	100%

P-value = 0.001 Pearson Chi-Square = 15.00

Also a significant differences were found regarding correct practices between the pretest and posttest ( $P < 0.05$ ). About the Comparison of the study sample regarding Nappy changing for infants before study program was (54%) of care givers

they changing nappy corrected while (46%) of care givers they changing nappy uncorrected but after program about (70%) percent of care givers they made correct practices and (30%) they did not make (table8)

**Table 8:** Comparison of the study sample according to their practice regarding Nappy changing for infants (daily routine practice) N = 50

No	Items	Pre				Post			
		Yes	No	Yes	No	Yes	No	Yes	No
1	Wash hands, put on gloves and apron	0	0%	50	100%	2	4%	48	96%
2	Use a changing table or changing mat placed on a surface at waist height. (This prevents bending and back strain. Consider the infant's rolling ability when choosing a surface).	50	100%	0	0%	50	100%	0	0%
3	Have all equipment ready to hand; never leave an infant unattended, even for a brief moment.	46	92%	4	8%	50	100%	0	0%
4	Place the infant supine on the mat with the head turned to the right or left.	42	84%	8	16%	50	100%	0	0%
5	Open a clean nappy and set it aside in readiness.	48	96%	2	4%	48	96%	2	4%
6	Do not remove the dirty nappy until you finish the cleaning process.	12	24%	38	76%	44	88%	6	12%
7	Cover a boy's penis with cotton wool or a wipe whilst cleansing to avoid getting splashed by unexpected urination.	2	4%	48	96%	4	8%	46	92%
8	Hold the infant's legs in one hand and pull the front of the nappy down with the other hand.	42	84%	8	16%	46	92%	4	8%
9	With the dirty nappy pressed flat under the baby, use cotton wool and warm water (for newborns) or wipes to gently cleanse the infant's nappy area.	26	52%	24	48%	32	64%	18	36%
10	Don't rub between skin	6	12%	44	88%	22	44%	28	56%
11	Carefully and gently blot dry between skin folds and creases	6	12%	44	88%	22	44%	28	56%
12	Lift the infant's legs and slide the dirty nappy out – set it away from the infant	44	88%	6	12%	48	96%	2	4%
	Total	27	54%	23	46%	35	70%	15	30%

P-value = 0.00

About the Comparison of the study sample regarding infants bathing before study program was (52%) of care givers they bath infant corrected while (48%) of care givers they bath

infant uncorrected but after program about (80%) percent of care givers they made correct practices and (20%) they did not make.(table9).

**Table 9:** Comparison of the study sample according to their practice regarding infants bathing (daily routine practice) N = 50

No	Items	Pre				Post			
		Yes	No	Yes	No	Yes	No	Yes	No
1	Ensure that the room is warm and draughts are reduced by closing windows and doors; infants have a large surface area to body weight/volume ratio and therefore lose heat quickly	26	52%	24	48%	46	92%	4	8%
2	Wash hands and put on disposable apron	15	30%	35	70%	27	54%	23	46%
3	Fill the bath, paying attention to warmth, depth and moving, and handling.	48	96%	2	4%	50	100%	0	0%
4	Place bath on a stable surface at waist height, usually table or bath stand Ensure items to be used are near at hand so that there is no temptation to leave the infant unattended at any time during the procedure.	33	66%	17	34%	46	92%	4	8%
5	Undress the infant and swaddle in a towel with only the face exposed. This helps to maintain the infant's body temperature and promotes comfort.	19	38%	31	62%	44	88%	6	12%
6	With the infant nursed on your lap, begin by cleansing the face, avoiding the eyes with either a clean washcloth or cotton-wool balls and plain water from the bath. Soap is not recommended for use on infants' faces as their facial skin is particularly sensitive and prone to reaction. Dry the face using allotting as opposed to rubbing action.	41	82%	9	18%	48	96%	2	4%
7	If you wish to wash the infant's hair, expose the head only and hold the infant securely along your arm with the head supported in your hand. Gently dampen the infant's hair with water from the bath. Use your cupped free hand or a jug to help you do this. Avoid inadvertent splashing of the eyes	35	70%	15	30%	47	94%	3	6%
8	Apply a small amount of baby shampoo, equivalent to no more than a 10-pence piece, to the infant's hair. Massage the scalp gently. Rinse the soap from the infant's hair and head. Rinse and repeat to get all of the shampoo off the scalp.	34	68%	16	32%	46	92%	4	8%
9	Add baby bath if used as recommended by the manufacturer. Excess use causes the skin to dry out and may irritate the skin, causing or exacerbating eczema	7	14%	43	86%	22	44%	28	56%
10	Undress the infant from the towel, holding the infant securely with one arm under the shoulders and holding the far arm, with the other hand supporting the infant and holding the far thigh. Whilst speaking encouragingly, lower the infant gently into the water feet first and gently lower the rest of the body into the bath. Most of the body and face should be well above the water level for safety.	40	80%	10	20%	45	90%	5	10%
11	Cup water gently over the infant with your hand, doing so frequently to keep the infant warm. Wash the infant, paying special attention to creases under the arms, behind the ears, around the neck, and, especially with a girl, in the genital area Have fun, but avoid splashing the floor as a wet floor poses a safety hazard Be mindful of the infant's body temperature and the time spent in the bath for thermal protection	34	68%	16	32%	46	92%	4	8%
12	Carefully dry the infant, paying particular attention to skin creases (back of neck, armpits, groins).	43	86%	7	14%	49	98%	1	2%
13	Ideally two people should carry the bath to a skin.	8	16%	42	84%	26	52%	24	48%

14	Clean the bath with water and detergent, dry thoroughly with paper towels, and store in a cool, dry area to prevent Cross infection.	14	28%	36	72%	41	82%	9	18%
15	Dispose of clinical waste and apron appropriately & Wash hands.	26	52%	24	48%	44	88%	6	12%
16	Ensure that the room is warm and draughts are reduced by closing windows and doors.	0	0%	50	100%	18	36%	32	64%
Total		26	52%	24	48%	40	80%	10	20%

P-value = 0.00

There are an improvement In the Comparison of the study sample according to their attitudes of care givers, before study program was (86%) of care givers they deal with good manner with infants during practices while (14%) they deal with bad

attitude with infants during practices, but after program about (94%) of care givers they deal with good attitude with infants during practices and only (6%) they deal with bad attitude with infants during practices. (table10)

**Table 10:** Comparison of the study sample according to their attitudes of caregivers regarding infants care (daily routine practice) N =50

No	Items	Pre		Post					
		Yes	No	Yes	No				
1	Responding quickly to crying the baby. Remember that crying is not always due to hunger.	16	32%	34	68%	14	28%	36	72%
2	Always smiling back at the baby when the baby smiles at you.	50	100%	0	0%	48	96%	2	4%
3	Call the baby by his name	48	96%	2	4%	48	96%	2	4%
4	Enjoying the baby in your care. Show your delight in seeing and spending time with the infant.	46	92%	4	8%	50	100%	0	0%
5	Cuddling and rocking the baby	42	84%	8	16%	50	100%	0	0%
6	Always holding babies when they are drinking from a bottle.	44	88%	6	12%	50	100%	0	0%
7	Gently tickling and laughing with the baby.	46	92%	4	8%	50	100%	0	0%
8	Put him in a safe spot where he can be part of everything but not be over stimulated. & Allow for quiet.	34	68%	16	32%	46	92%	4	8%
9	Help him develop social behaviors by responding to him when he is alert	42	84%	8	16%	50	100%	0	0%
10	Respond to her messages and try to find her real needs.	46	92%	4	8%	50	100%	0	0%
11	Always hold and engage in interaction when feeding him.	42	84%	8	16%	50	100%	0	0%
12	Hold, cuddle, smile, talk to and laugh with the baby.	40	80%	10	20%	50	100%	0	0%
13	Talk, sing and read to the baby often, especially during daily routines such as feeding and diaper changing. Tell him about everything that is going on around him.	38	76%	12	24%	38	76%	12	24%
14	Note the sights and sounds he likes. These might be things that will help him when he is unhappy.	46	92%	4	8%	50	100%	0	0%
15	Copy and respond to her sounds & Show your love, happiness and special bond to him.	46	92%	4	8%	50	100%	0	0%
16	Carry the baby to different areas in the room and talk about what you both see Offer faces to look at (especially that of the primary caregiver).	46	92%	4	8%	50	100%	0	0%
17	Pay attention to his moods, and respond to his cries and sounds	46	92%	4	8%	50	100%	0	0%
18	Share books, stories and music as part of quiet cuddling time While awake, give him time on his back so he can have a broader view of the world, hear with both ears, and use his hands..	4	8%	46	92%	8	16%	42	84%
19	Help the baby find his fist or thumb for comfort.	46	92%	4	8%	50	100%	0	0%
20	Respond quickly, warmly and attentively as the baby is forming a very important attachment to you.	40	80%	10	20%	50	100%	0	0%
21	Let her know he can count on you to meet his needs. Read his cues and respond quickly to help comfort her when his cries.	50	100%	0	0%	50	100%	0	0%
22	Stay calm when he loses control, helping him to feel safe. As he begins to calm, he will feel more in control When holding is not possible.	44	88%	6	12%	48	96%	2	4%
23	Recognize, name, and respect he feelings and talk about what He seems to be "saying".	46	92%	4	8%	50	100%	0	0%
24	Watch for the kinds of touch he likes and dislikes. Does he smile and continue to touch or does he fuss and pull away? Stop what he seems to dislike.	48	96%	2	4%	48	96%	2	4%
25	Engage frequently in back and forth interactions.	48	96%	2	4%	50	100%	0	0%
26	Coo, smile and stick out your tongue. And respond when his calls for you Bring him to various places within your setting so that he has different things to look at	46	92%	4	8%	50	100%	0	0%
27	Delight in her accomplishments, including his actions and the sounds he makes.	44	88%	6	12%	50	100%	0	0%
28	Watch closely. Sit on the floor with his often.	50	100%	0	0%	50	100%	0	0%
29	Allow a baby freedom to explore through looking, sucking, stretching and reaching.	48	96%	2	4%	50	100%	0	0%
30	Allow him to move and develop his skills naturally.	46	92%	4	8%	50	100%	0	0%
Total		43	86%	7	14%	47	94%	3	6%

## Discussion

**Introduction:** A study conducted at Mygoma center in Khartoum to evaluate the effect of health education program on the knowledge, attitude and practice of caregivers regarding infant care. The data collected by the researcher and trained persons through questionnaires (50) and chick list filled from care givers, who were taking care of (138) infants and they completed the education program. The infants age

between (1-12) months, (30%) of them between (1-2) month. More than half (54%) of care givers age between (30-40) yrs. The majority of care givers (68%) they have an infants, and that is good for the benefit of those infants.

Before the educational program the care givers had poor knowledge regarding, the preparing bottles, the program increased knowledge of the study sample (care givers), where the awareness of care givers regarding the preparing bottles

about fifty eight (58%) at pretest measurement, which increased at posttest measurement to (82%) percent, indicating significant differences ( $p=0.001$ ) in their knowledge between pretest and posttest period. This was agreed with the findings of previous study conducted in Cambodia to assess the impact of a nutrition education (NE) program aimed at promoting improved IYCF behaviors in combination with an agriculture intervention on children's dietary diversity and nutritional status, the study showed that the nutrition education intervention embedded in an agriculture project led to significant improvements in the quality of children's diet. However, the mean diversity of children's diet remained just below the minimum level of four out of seven food groups as recommended for young children by the World Health Organization. The best practices have been summarized in several reviews, but the scientific evidence on nutrition education projects in development cooperation and their impact on growth is limited. (Reinbott, A. *et al.*, 2016.)

Concerning the Knowledge of the care givers regarding the time for giving feeding formula to infants, it was found to be clearly increased after attendance of the program, There was an improvement in the knowledge of care givers, before the education program, about forty six (46%) percent of the care givers knew, while thirty eight (38%) percent knew partially and sixteen (16 %) they did not know, as for after the education program most of the study group ninety four (94%) knew the time of feeding, while one (1%) percent knew partially and two (2%) percent did not know, indicating significant differences ( $P=0.00$ ) in their knowledge between pretest and posttest period. This agreed with, Responsive feeding: is a technique in which infants are fed when they express hunger, instead of being forced to keep to a feeding schedule. This can be challenging for caregivers who provide care for several infants at one time. While it may be stressful for caregivers, practicing responsive feeding ensures infants are receiving appropriate nourishment for growth and development. Caregivers should watch for and respond to an infant's cues for hunger. An infant who is hungry may: Wake and toss, Suck on fist, Cry and fuss, Appear as though they may cry (Orphan Nutrition, 2016)

There was an improvement in the knowledge of care givers regarding the begin at initiation of infant bottle feeding, after the attend education program, however before the program about eighty eight (88%) percent of the care givers know how to begin at initiation of infant bottle feeding, while twelve (12%) percent were know partially and no one did not know, as for after the education program most of the study group ninety eight (98%) know the begin at initiation of infant bottle feeding, while no person know partially and only one (1%) percent did not know. This indicating significant differences ( $P=0.02$ ) in their knowledge between pretest and posttest period. This agreed with (Feeding Infants: A Guide for Use in the Child Nutrition Programs.), Wash your hands. Hold your baby close to you, supporting the back and the head with your hand or in the crook of your arm. You should hold the baby in an upright position so that the head is higher than the stomach. Do not feed the baby in a lying down position as the milk flows from the bottle too rapidly and may cause the baby to choke or overfeed and spit up. Never leave the baby in the crib and prop or hold the bottle in his/her mouth for feeding. Brush

the cheek or the lips with the bottle nipple to encourage mouth opening.

(Jacobs, A., *et al.*, 2016)

Concerning the Knowledge of the care givers regarding the time for giving infants Foods Other Than Formula, it was found to be clearly increased after attendance of the program, There was an improvement in the knowledge of care givers about eighty two (82%) percent of care givers they knew when do you permitting to give infant Foods Other Than Formula and eighteen (18%) percent of care givers they did not know when do you permitting to give infant Foods Other Than Formula, however after the program the whole sample (100%) have recognized when do you permitting to give infant Foods Other Than Formula. indicating high significant differences ( $P=0.001$ ) in their knowledge between pretest and posttest period and that was confirmed by (WHO) The World Health Organization recommends that infants be exclusively breast-fed for the first six months. However, for orphaned infants, breast milk is not an option. In situations where breast milk is not available, an iron-fortified formula can be used as a substitute. Infants under 6 month of age should not be offered fruit juice. It can contribute to problems such as tooth decay, abdominal pain and bloating, and diarrhea. Additionally, cow milk should not be fed to infants 0-6 months old. Cow milk is difficult for infants to digest and does not provide appropriate amounts of nutrients necessary for early development. (Orphan Nutrition, 2016)

About knowledge of the care givers regarding weaning the baby from the bottle There was an improvement in the knowledge of care givers about sixty two (62%) percent of care givers they knew when did you wean the baby from the bottle however (38%) they did not know when they wean the baby from the bottle, as for after the education program most of the study group ninety (90%) they knew when they wean the baby from the bottle, (10%) percent they did not know. this Indicating high significant differences ( $P=0.005$ ) in their knowledge between pretest and posttest period and that was confirmed by As your baby begins to eat more solid foods and drink from a cup, he can be weaned from the bottle. Begin to wean your baby gradually, at about 9 to 10 months. By 12 to 14 months, most babies can drink from a cup. (Tsang, T., *et al.*, 1997)

Before the educational program the care givers had poor knowledge, regarding (the reasons of infants crying ) about seventy six (76%) percent of care givers they knew the reasons of infants crying and (24%) they did not know, as for after the education program most of the study group ninety eight percent (98%) they knew and only two (2%) they didn't know. this Indicating high significant differences ( $P=0.004$ ) in their knowledge between pretest and posttest period and that was confirmed by Infants cry as a form of basic instinctive communication. A crying infant may be trying to express a variety of feelings including hunger, discomfort, overstimulation, boredom, wanting something, or loneliness, When your baby cries without apparent reason for several hours on a regular basis, he may have colic. (Tsang, T., *et al.*, 1997)

Regarding the knowledge of the care givers about (the best sleeping position to infants) There was an improvement in the knowledge of care givers however before program about four

(4%) percent of care givers they knew the best sleeping position to infants, thirty six (96%) they did not know, as for after the education program twenty four (76%) of the study group they knew and (24%) percent they did not know. indicating high significant differences ( $P=0.001$ ) in their knowledge between pretest and posttest period and that was confirmed by Safe Infant Sleep Interventions study which showed Sudden infant death syndrome (SIDS) and other sleep-related infant deaths, such as accidental suffocation and strangulation in bed and ill-defined deaths, are collectively known as sudden and unexpected infant death (SUID) and account for >4000 deaths annually in the USA. While the "Back to Sleep" public awareness campaign, which began in 1994 and has been superseded by the "Safe to Sleep" campaign, is credited with decreasing rates of prone infant sleeping leading to reductions in mortality rates from SIDS/SUID, these decreases have plateaued in the past decade. Some caregivers, including parents, relatives, child care providers, and health care professionals, continue to resist adoption of safe infant sleep recommendations, such as placing infants supine, avoidance of smoke exposure, avoidance of parent-infant bed sharing, and avoidance of soft bedding (including blankets, pillows, and bumper pads). In an effort to change infant sleep-related practices of parents and professionals, multiple interventions have been implemented. These efforts to effect change have been directed at multiple levels, from infant caregivers to state legislation, and can be viewed in the context of health behavior change models and theories. (Rachel, Y. *et al.*, 2016)

significant differences ( $p:000$ ) appeared between pre and post application of the program, Regarding Nappy changing for infants, Most of study group (care givers) eighty (70%) percent after program they did correct practices and only twenty (30%) percent they did not correct practices. however before study program was fifty four (54%) percent of care givers they did correct practices while forty six (46%) percent they did not correct practices. This agreed with Begin the diaper change with good hand washing. To change a baby's diaper, remove the bottom half of the infant's clothing. Baby "onesies" that snap between the legs make diaper changes especially easy. Then remove the old diaper and quickly examine the contents in order to monitor the baby's health and digestion. Next, gently wipe the bottom clean with baby wipes to remove any urine or fecal matter. Be careful to wipe from the urethra toward the anus (front to back) and never in the opposite direction, to prevent germs from fecal matter infecting the urethra or vagina. Baby wipe warmers can make wipes feel better than cold wipes for cleaning. Some babies have sensitive skin that may react to baby wipes, so caregivers can also use a wash cloth dampened with warm water. Allowing babies to dry a few seconds before putting a diaper back on can help discourage diaper rash. Baby powder is no longer advised because inhaling the powder can be damaging for babies. (Oswalt A., 2016)

Regarding Comparison of the study sample according to their practice about infants bathing the correct practices of the caregivers was improved due to application of the program, Most of study group (care givers) eighty (80%) percent after program they did correct practices and only twenty (20%) percent they did not correct practices. however before study

program was fifty two (52%) percent of care givers they did correct practices while forty eight (48%) percent they did not correct practices. indicating significant differences ( $P=0.00$ ) in their practice between pretest and posttest period. indicating significant differences ( $P=0.00$ ) in their practice between pretest and posttest period and that it confirmed with: Proper skin care and bathing helps maintain the health and texture of an infant's soft and delicate skin while providing a pleasant experience (Noonan, Quigley and Curley, 2006). Contrary to popular thought, most infants do not need a bath every single day. nappy changes and wiping of mouth and nose after feedings, most infants only need to be bathed two or three times a week or every other day (DH, 2006) Bathing more frequently may lead to dry and irritated skin (Noonan *et al.*, 2006).

About the Comparison of the study sample according to their attitudes of care givers regarding infants care there was apposite change occurs at their care giver attitude before study program was eighty six (86%) percent of care givers they deal with good attitude with infants during practices while forty fourteen (14%) percent they deal with bad attitude with infants during practices, but after program about ninety four (94%) percent of care givers they deal with good attitude with infants during practices and only six (6%) percent they deal with bad attitude with infants during practices. This agree with study done in St. Petersburg, Russian Federation to evaluate the effect of early social-emotional and relationship experience on the development of young orphanage children. The results show substantial improvement in children's physical, mental, and social-emotional development; improvements for typical children and those with a variety of disabilities; and a dose-response effect for many developmental outcomes in which the more positive social-emotional experience given to children and the longer they spent in the interventions, the greater the developmental gains. These results substantiate the potential importance of early social-emotional experience and adult-child relationships for the contemporary development of young children in institutions. (Susan C., *et al.*, 2009)

### Conclusion

The study concluded that: There was significant statistical improvement in knowledge and practices skills after the educational program offered to the caregivers. There was a statistically significant difference between pre and posttest after the application of the educational program ( $P < 0.05$ ) in the knowledge of care givers regarding the preparing bottles, Time for giving feeding formula to infants, how to start infants bottle feeding, The time for introducing foods with formula to infants, reasons of infant crying. In addition, there was a scope of improvement in the performance of practical skills of care givers post application of the program ( $P < 0.05$ ) among Dipper change for infants and regarding correct infants bathing.

### Recommendations

The researcher recommends the following: It is important to design, plans, strategies and protocols in all orphan centers through which improvement and the quality of care to infants when will be receive. In Order to reach a successful goal,

orphan centers must be provide visible support and sufficient resources for continuous educational programs to grant the importance of improving the quality of infants care. Supervisory system should be created to ensure best practice. It is recommended that the availability of recourses, increase number of care givers to meet the number of infants and also It is recommended that the availability of recourses training of staff members, staff motivation and teamwork contributes in promotion in infection control and preventi

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