

Feeding Protocol for Mothers Having Infant with Cleft Lip and Cleft Palate

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Abstract: *Background:* Cleft palate an opening in the roof of the mouth due to a failure of the palatal shelves to come fully together from either side of the mouth and fuse during the first months of development as an embryo. The opening in the palate causing feeding problems. Mothers of infant born with clefts have many questions and concerns, including basic information regarding care especially feeding. *The aim of the study:* To assess the knowledge and practice of mothers regarding feeding of their infant with cleft lip and cleft palate. Evaluate the effectiveness of feeding protocol on knowledge and practice of mothers having infant with cleft lip and cleft palate. To find out the association between knowledge and practice of mothers having infant with cleft lip and cleft palate with their selected demographic variables. *Research design:* A quasi- experimental design was adopted in the current study. *Sample:* Convenience sample of sixty mothers having infants with cleft lip and/or palate. *Setting:* was carried out in the inpatient surgical department and outpatient surgical clinic of Specialized Pediatric Hospitals at Benha City. *The tool of data collection:* *Tool I:* A structured interviewing questionnaire consists from three parts, *Part 1:* Infants 'and mothers personal characteristics. *Part (2):* Evaluation of infant feeding reported from their mothers. *Part (3):* Mothers' knowledge pre/post feeding protocol. *Tool II:* Observational checklist of mother's practice pre/post feeding protocol. *Results:* The study results revealed that the mean age of infant was 3.8 ± 3.3 , and more than half of mother had family history of cleft lip and palate. Also more than half of mother use sitting position during feeding, there were statistical significant differences between knowledge and practice of mothers post feeding protocol at $P < 0.05$. *Conclusion:* The feeding protocol was effective and improved mother's knowledge and practice regarding feeding of their infant with cleft lip and palate. *Recommendation:* The study recommended that it is importance of update feeding protocol for mothers having infant with cleft lip and palate.

Keywords: Infant, Cleft Lip and Palate, Feeding Protocol, Mothers

1. Introduction

Cleft lip and palate are developmental defects or congenital malformations of the upper lip and roof of the mouth that are present at birth. Cleft lip and palate may occur separately and in combination. Both malformations happen as a result of fragmented combination of the creating lip (normally occurs by 35 days of gestation) or of incomplete fusion of the hard or soft palate (typically happens by the eighth to ninth week of gestation). The roof of the mouth (palate) is formed between the sixth and ninth weeks of

pregnancy. A cleft palate is an opening of the roof of the mouth happens if the tissue that makes up the roof of the mouth does not combine totally together completely during pregnancy. Some infants, both the front and back parts of the palate are open, and others infants, only part of the palate is open (Medicine Net, 2016).

Around one in 700 babies are born with a cleft around the world (Cleft palate Association, 2017). (Centers for disease control and prevention, 2015) Estimation that approximately

7,088 infants are born each year with an orofacial cleft. Also estimated that around 1 case of orofacial cleft occurs in every 500-550 birth. The prevalence varies by ethnicity, country, and socioeconomic status. Nonsyndromic CLP, which forms the largest subgroup of craniofacial anomalies, happens in the scope of 1.5-2.5 cases per 1000 live births.

The different types of clefts are: cleft lip (CL) (including CL with cleft alveolar process), CLP and cleft palate (CP). The etiology is still unknown, but it is considered to be multifactorial, which means that there is an interaction between genetic factors and environmental factors such as maternal smoking or drug-use. It is also common for these infant with CP, to have a hyper nasal tone to their voice due to impaired functioning of the palate and pharyngeal muscles. They may also have retarded development of their expressive language and speech, as well as less advanced articulation. Children with both CL and CP have a greater dental deformity than those with CL. Otitis media and hearing loss are fairly common complications of CP. Habilitation starts at birth and continues throughout the growth period until the age of about 20 years. A multidisciplinary approach, involving plastic surgery, orthodontics and speech therapy, is used to address facial appearance, impairment related to dental occlusion and speech development. Surgery of the lip is done at three months of infant age, while surgery of the palate is performed at 6 months or later (American Speech-Language-Hearing Association, 2016).

A cleft palate prevents an infant from making enough suction in the nipple to draw out formula or breast milk from a bottle. The infants with cleft palate are at hazard for poor weight gain because they utilize a great of energy to feed. Specially designed bottle systems, nipples and flow valves help in the comfort and effectiveness of feeding the infant (Pediatric Cleft and Craniofacial Center, 2016) and (Cleft palate and Craniofacial Institute, 2017).

The most immediate concern for an infant with cleft lip is good nutrition. The infant with only a cleft lip, there should be no loss of suction and can suck well from a bottle or a breast, ought to have the ability to eat normally using standard techniques. Infants with cleft lip and palate have poor suction and require a bottle with a freer flow rate, such as, one of the vented bottles on the market, or a faster flow nipple. Some mother's hold the two sides of the lip together without blocking the nostrils to restore suction immediately (Cleft palate and Craniofacial Institute, 2017).

Successful and effective oral feeding is vital for growth, comfort, bonding, and promoting normal oral motor development. Infants born with cleft lip alone and an intact palate may only need lactation support and tips for repositioning the infant to promote normal feeding. Infants have cleft palate need individualized assessment and close follow-up to ensure normal growth (Child Development and Rehabilitation Center, 2016).

Mothers of infant have clefts have many questions and concerns, including the cause of the birth defect, the health of the baby, basic information regarding care especially feeding,

and the timing and sequence of operations and non-operative treatments that the child will undergo (Buchman, et al., 2011).

Mothers need to know everything about their infant with a cleft lip/cleft palate. Mothers may grieve for the loss of the ideal infant that they expected. Mothers may need assistance to view their infant as a whole child, rather than focusing solely on the physical defect (Ball, et al., 2012). The mothers are needed to learn the technique of breastfeed their infant and will most likely to require some helped strategies and additionally lactation techniques. Also the infant may need more amount for continues growing well and develop. The mothers can express breast milk given by a special cup or feeder, a nipple shield, or a combination of these (Australian Breastfeeding Association, 2015).

Pediatric nurses should upgrading the mother's knowledge, raising awareness about the importance of follow up care with craniofacial team for promoting their children's health condition and periodical meetings are to be held with all mothers having cleft lip and palate children to discuss feeding problem, assess growth and development of infant, prevention methods and early detection of problems associated with the defect and different ways of management (El wasfey, 2009).

1.1. Significance of the Study

Oro-facial clefts (OFCs) remain a prominent health issue in developed and developing countries (Oginni, and Adenekan., 2012). Cleft lip (CL) and palate (CP) occurs in about 1 to 2 per 1000 births in the developed world. CL is about twice as common in males as females, while CP without CL is more common in females (Watkins, et al., 2014). In a study done in Egypt (Ain Shams University hospital) during the period from year 1995 up to year 2009 about "congenital malformations prevalence among Egyptian children (from birth up to 18 years) and associated risk factors", the study results revealed that the CL and CP prevalence were 0.3/1000 among the study sample (Shawky, and Sadik, 2011).

The other studies supported that mother having infants with cleft palate and cleft lip facing major problems with feeding their infants and others problems in infant growth. Feeding protocol provide mothers with effective instructions help them to care of their infants during feeding and overcome problems, provide support to promote normal feeding, learning breastfeed techniques and lactation aids. Enhancing and improve quality of life for infant and their mothers until surgical correction of the defect for effective outcomes.

From the researchers' clinical experience, it is observed that the mothers of affected infants are unable to feed their infants well especially with cleft palate and the risk for aspiration is very high, therefore the infants appear underweight and unhealthy general condition which leads to opportunistic infections, recurrent administration of antibiotics and hospitalization. Also mothers of those children always appear depressed and have guilty feeling

about their children condition.

1.2. The Aim of the Study

-To assess the knowledge and practice of mothers regarding feeding of their infant with cleft lip and cleft palate.

-Evaluate the effectiveness of feeding protocol on knowledge and practice of mothers having infant with cleft lip and cleft palate

-To find out the association between knowledge and practice of mothers having infant with cleft lip and cleft palate with their selected demographic variables.

1.3. Research Hypothesis

1. The feeding protocol will be effective in improving mother's knowledge and practice toward their infant with cleft lip and palate.
2. There will be significant association between pre/post knowledge and practice score of mothers having infant with cleft lip and cleft palate with their selected demographic variables.

2. Subjects and Methods

Research design: A quasi- experimental design was used.

Setting: The study was carried out in the inpatient surgical department and outpatient surgical clinic of Specialized Pediatric Hospitals at Benha City.

Sample: Convenience sample of sixty mothers of CL and/or CP infants recruited at ten months period. Mothers' inclusion criteria: Mothers having infants with CL and/or CP regardless mothers' age and educational level, and attending the study settings. Infants' inclusion criteria: infant from birth to 1 year of age, and confirmed diagnosis of cleft lip and/or palate by pediatric surgeon. Exclusion criteria: Another congenital anomalies such as other GIT disorders as congenital hypertrophic pyloric stenosis, intestinal obstruction.....etc, or chronic diseases as chronic blood disorders and bronchial asthma,.....etc.

2.1. Data of Tool Collection

Tool I: A structured interviewing questionnaire consist from three parts,

Part 1: -Infant's personal characteristics, as: age, gender, birth order, infant weight and clinical diagnosis.

-Mothers' personal characteristics, as: age, level of education, occupation, sibling number, income, residence and family history of cleft lip and palate.

Part 2: Evaluation of infant feeding reported from their mothers as feeding method, time for complete feeding, difficult during feeding, nutritional supplement, kind of supplement, feeding position, infant appetite and stress during feeding.

Part 3: Mothers' knowledge pre/post feeding protocol such as (definition, causes, signs and symptoms, complication, long term effect, management, special feeding aids, time and

long of feeding, psychological support and weaning time and type).

Scoring system: Each correct answer took two scores, the incomplete answer took one score and the wrong answer took zero score with a total score of knowledge 20 degree. Total knowledge score translated into above ($\geq 75\%$) considered good, score, also, between (60% – less than 75%) considered average, finally the score(less than 60%) considered poor knowledge.

Tool II: Observational checklist pre/post feeding protocol include preparation, positioning and technique of bottle and breast feeding.

Scoring system: Each respond of practice divided into done complete took score 2, done incomplete answer took 1 score and not done answer took zero score. The total score of practice was 26 score, then the total practice of mothers pre/post feeding protocol translated to competent (75% and more) and incompetent (less than 75%).

Validity and Reliability: Data collection tools were submitted to two experts of pediatric nursing to test the content validity. The experts 'agreed on the content. Suggested modifications were carried out in the content. The reliability coefficients" alpha between questions was 0.72.

2.2. Administrative Design

Official letters were issued from Dean Faculty of Nursing, Benha University to the Director of the selected previously setting. After explaining the purpose of the study and taken permission for data collection and participation of mothers in research study.

2.3. Ethical Considerations

Oral consent was obtained from infant' mothers to participate in the current study after orally and in writing explanation of the aim of the study, that participation was free to withdraw from the study at any point. Confidentiality of the data collected and anonymity is guaranteed.

2.4. Pilot Study

A pilot study was conducted on 10% of mothers and their infants to test the applicability of the tool and excluded from the studied sample. After analyzed the pilot study some questionnaire were omitted.

2.5. Field Work

The actual field work was carried out from the beginning of May, 2016 to February 2017 in the previously mentioned settings covering ten months intermittent. The researchers visited the previously mentioned settings two different days/week from 11.00 Am to 1.00 Pm until the predetermined sample size completed. The average time consumed to fill in the tools was 45 minutes.

2.6. Feeding Protocol Construction

Assessment phase: The studied mothers were interviewing

to collect baseline data, at the beginning of the interview the researchers greeted the mothers, introduced themselves to each participant included in the study, explained all information about the study purpose, duration, and activities. The researcher divided their time as 20 minutes for the first tool, and 25 minutes for the second tool; average number collected was 1- 2 mothers / in different days. The total sample was divided into 30 subgroups that include 2 mothers for each session.

Planning phase:

Feeding protocol was designed by the researchers after review of relevant literature and according to the need during assessment phase. The feeding protocol included illustrated Arabic instructions to improve mothers' knowledge about cleft palate and lip. The practice consisted of demonstration and re-demonstration of feeding techniques. The feeding protocol was given to all recruited mothers in the study. In addition all session's number and its contents, different learning methods and instructional media were determined correctly.

Implementation phase: The feeding protocol was implemented in 5 sessions; session one include; evaluation the infant feeding reported from their mothers. Session two and three about knowledge of cleft lip and palate. Fourth and fifth session include feeding technique skills. The duration of each session ranged between 30-45 minutes. The researcher beginning of each session, assess the mothers feedback and a summary about previous session then purpose of the new session, taking into consideration using simple and clear language to suite the mothers. Different learning methods were used including lectures, brainstorming and role-playing. The teaching media used were fliers, colored posters, and power point, videos about feeding technique. All mothers taken copy from the feeding protocol in Arabic language booklet included all topics related knowledge and practice of feeding infant with cleft lip and palate. The communication was achieved between researcher and mother via telephone to ensure understanding, answer any question and to verify information given.

Evaluation Phase: The feeding protocol implementation were evaluated the effectiveness by using same of pre test tool that conducted immediately post implementation by comparing between the change in mothers' knowledge and practice.

2.7. Statistical Analysis

Statistical analysis was done using SPSS version 20 statistical software package. Data were presented using frequency, Qualitative data described by number and percent, Chi-square test used to test the relation between qualitative variables. Correlation between quantitative variables was done using Pearson correlation coefficient. A statistically significant difference was considered at $p \leq 0.05$, and a highly statistically significant difference was considered at $p \leq 0.001$.

3. Results

Table 1. Personal characteristics of infant with cleft lip and palate (N= 60).

Items	No	%
Infant age		
0-6 months	38	63.4
6-12 months	22	36.6
Mean age \pm SD/months	3.8\pm3.3	
Gender		
Boys	35	58.3
Girls	25	41.7
Birth order		
First	36	60
Middle	4	6.7
Last	20	33.3
Infant weight		
2-5	40	66.7
6-9	20	33.3
Mean of current weight \pmSD/kg.	5.9\pm1.9	
Clinical diagnosis		
Cleft lip	30	50
Cleft palate	20	33.3
Cleft lip and palate	10	16.7

Table 1: illustrated that more than half of infant age was 0-6 months, with mean age 3.8 ± 3.3 . More than half of infant was boys and first birth order. The more than half of infant was 2-5 kg with mean weight 5.9 ± 1.9 and having cleft lip diagnosis.

Table 2. Distribution of mother's personal characteristics (N=60).

Items	No	%
Mother age		
Less than 20	30	50
20- 30	8	13.3
30-40 and more	22	36.7
Mean age \pm SD	20.1\pm2.4	
Level of education		
Primary	5	8.3
Secondary	35	58.3
University	20	33.3
Occupation		
Working	25	41.7
House wife	35	58.3
Sibling number		
1-2	36	60
3-4	20	33.3
5-6	4	6.7
Income		
Adequate	5	8.3
In adequate	55	91.7
Residence		
Rural	31	51.7
Urban	29	48.3
Family history of cleft lip and palate		
Yes	31	51.7
No	29	48.3

Table 2: revealed that half of mother age less than 20 years with means age at 23.15 ± 2.48 . Also, more than half of mother's education was secondary and house wife. In addition nearly two third of mothers have from 1-2 sibling number, and more than three third of mothers with in adequate income. Also, half of mothers live in rural areas, and more than half of mother had family history of cleft lip and palate.

Table 3. Evaluation of infant feeding reported from their mothers (N=60).

Items	No	%
Feeding methods		
Breast	20	33.3
Bottle	10	16.7
Complimentary	30	50
Time for complete feeding		
<10 minutes	30	50
10- 20 minutes	10	16.7
20-30 minutes	9	15
30>40 minutes	11	18.3
Difficult during feeding		
Vomiting	25	41.7
Coughing	20	33.3
Chocking	15	25
Nutritional supplement		
Yes	30	50
No	30	50
kind of supplement		
Liquid	50	83.3
Semi solid	10	16.7
Feeding position		
Lying down	36	60
Held on lap	24	40
upright position	0	0
Infant appetite		
Good	12	20
Fair	18	30
Poor	30	50
Stress during feeding		
Yes	45	75
No	15	25

Table 3: illustrated that half of mothers using complimentary method. Also, half of mothers complete time of feeding through < 10 minutes. In addition, less than half of mothers reported that their infant have vomiting as difficult

during feeding. More than half of mother use sitting position during feeding. Meanwhile half of mothers stated poor appetite of their infant and two third of mothers suffer from stress during feeding.

Table 4. Mothers' knowledge regarding cleft lip and palate pre / post feeding protocol (N=60).

Items	Pre feeding protocol						Post feeding protocol						X2	P
	Correct		Incomplete		Incorrect		Correct		Incomplete		Incorrect			
	N	%	N	%	N	%	N	%	N	%	N	%		
Definition of cleft lip and palate	4	6.7	6	10	50	83.3	44	73.3	12	20	4	6.7	9.25	<0.05
Causes of cleft lip and palate	1	1.7	7	11.6	52	86.7	42	70	9	15	9	15	7.12	<0.05
Signs and symptoms of cleft lip and palate	12	20	6	10	42	70	52	86.6	4	6.7	4	6.7	9.41	<0.05
Complications of cleft lip and palate	3	5	13	21.7	44	73.3	45	75	7	11.6	8	13.4	7.14	<0.01
Long term effect of cleft lip and palate	6	10	22	36.7	32	53.3	46	76.6	9	15	5	8.3	8.25	<0.01
Management of cleft lip and palate (surgical option)	7	11.6	12	20	41	68.3	54	90	3	5	3	5	8.32	<0.01
Special feeding aids	6	10	24	40	30	50	55	91.6	2	3.3	3	5	10.13	<0.05
Timing and long of feeding	5	8.3	9	15	46	76.6	45	75	11	18.3	4	6.7	9.5	<0.05
Psychological support	3	5	12	20	45	75	47	78.3	4	6.6	9	15	9.35	<0.05
Weaning time and type	7	11.6	30	50	23	38.3	32	53.3	22	36.6	6	10	8.07	<0.05

Table 4: show that there was statistically significant difference between knowledge of mother pre and post feeding protocol at all items $p < 0.05$ except items of complications of cleft lip and palate, long term effect of cleft lip and palate and management of cleft lip and palate at $p <$

0.01.

Figure 1: illustrated that there were statistical significant difference between mothers knowledge pre/post feeding protocol, the knowledge of mothers improved post than pre feeding protocol.

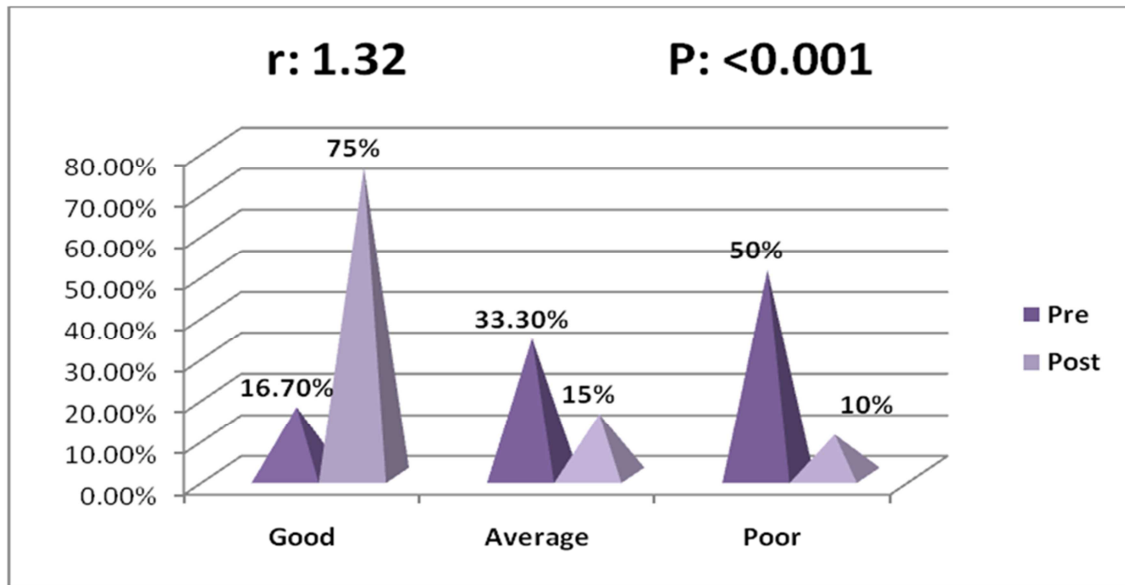


Figure 1. Distribution of total mothers knowledge pre and post feeding protocol.

Table 5. Distribution of mother's practice pre and post feeding protocol (N=60).

Items	Pre feeding protocol						Post feeding protocol						X ²	P
	Done complete (2)		Done Incomplete (1)		Not done (0)		Done complete (2)		Done incomplete (1)		Not done (0)			
	No	%	No	%	No	%	No	%	No	%	No	%		
Bottle feeding														
-Preparation for bottle feeding	5	8.3	9	15	46	76.7	35	58.3	21	35	4	6.7	8.2	>0.04
-Nipple selection	2	3.3	4	6.7	54	90	42	70	17	28.3	1	1.7	11.02	<0.05
-Positioning of feeding	7	11.7	3	5	50	83.3	33	55	21	35	6	10	9.04	<0.05
Techniques of bottle feeding														
Keep the bottle tilted so the nipple is always filled with milk	6	10	2	3.3	52	86.7	36	60	19	31.7	5	8.3	7.09	<0.05
pointed down away from the cleft	3	5	7	11.7	50	83.3	45	75	11	18.3	4	6.7	11.04	<0.05
pull the lower jaw down gently to get the baby’s tongue down and out of the way	5	8.3	1	1.7	54	90	44	73.3	12	20	4	6.7	9.65	<0.05
Technique of Breast feeding														
Closing lip with fingers to help make a seal	4	6.7	7	11.7	49	81.7	39	65	9	15	12	20	10.08	<0.01
Using the breast tissue to close the cleft	3	5	9	15	48	80	38	63.3	8	13.3	16	26.7	13.14	<0.01
Rotating the position of the baby's mouth/latch around the breast, reverse pressure softening, hand expression and pumping	3	5	11	18.3	46	76.7	37	61.7	9	15	12	20	8.65	<0.05
Maintaining an abundant milk supply	4	6.7	15	25	41	68.3	42	70	6	10	12	20	9.23	<0.05
Assisting milk letdown via hand expression, breast compressions, and visualization of the milk flowing	5	8.3	12	20	43	71.7	48	80	7	11.7	5	8.3	8.02	<0.05
-Burping	4	6.7	18	30	38	63.3	47	78.3	5	8.3	8	13.3	12.08	>0.04
-Cleaning the mouth	8	13.3	17	28.3	35	58.3	49	81.7	5	8.3	6	10	14.12	>0.03

Table 5: Showed that there were statistical significant difference between mother's practice pre and post feeding protocol in all items at $p < 0.05$, $p < 0.01$ respectively, except items of preparation for bottle feeding, burping and cleaning mouth.

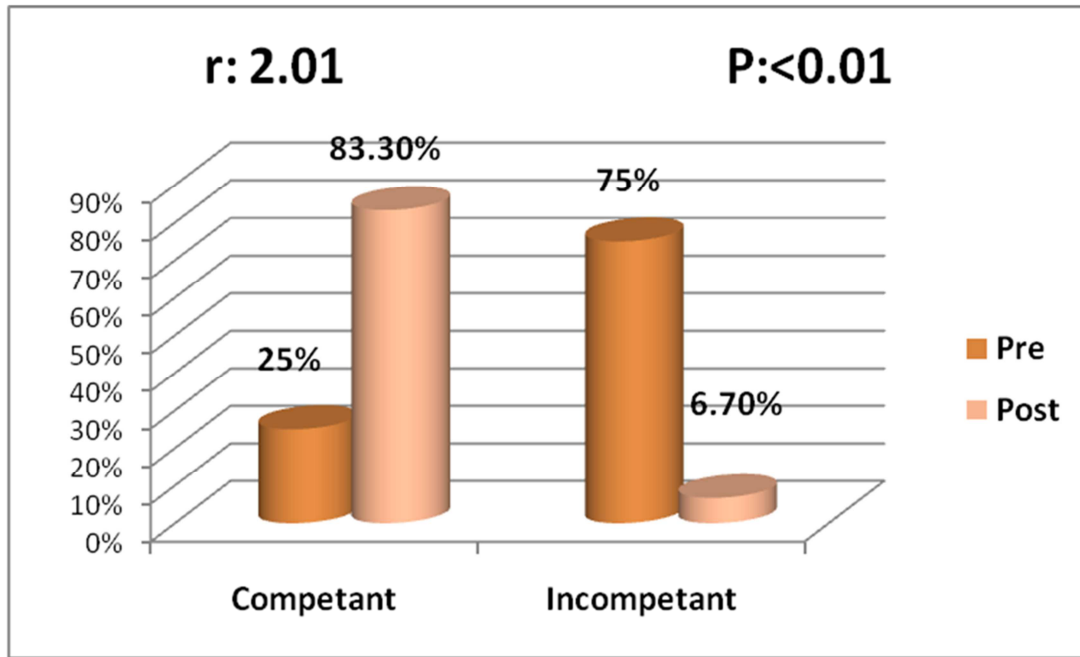


Figure 2. Distribution of total mothers practice pre / post feeding protocol.

Figure 2: revealed that there was statistical significant difference between mothers practice pre/post feeding protocol, the practice of mothers improved post than pre feeding protocol. While competent mothers practice pre feeding protocol was 6.7% compare to post feeding protocol was improved to 83.3%.

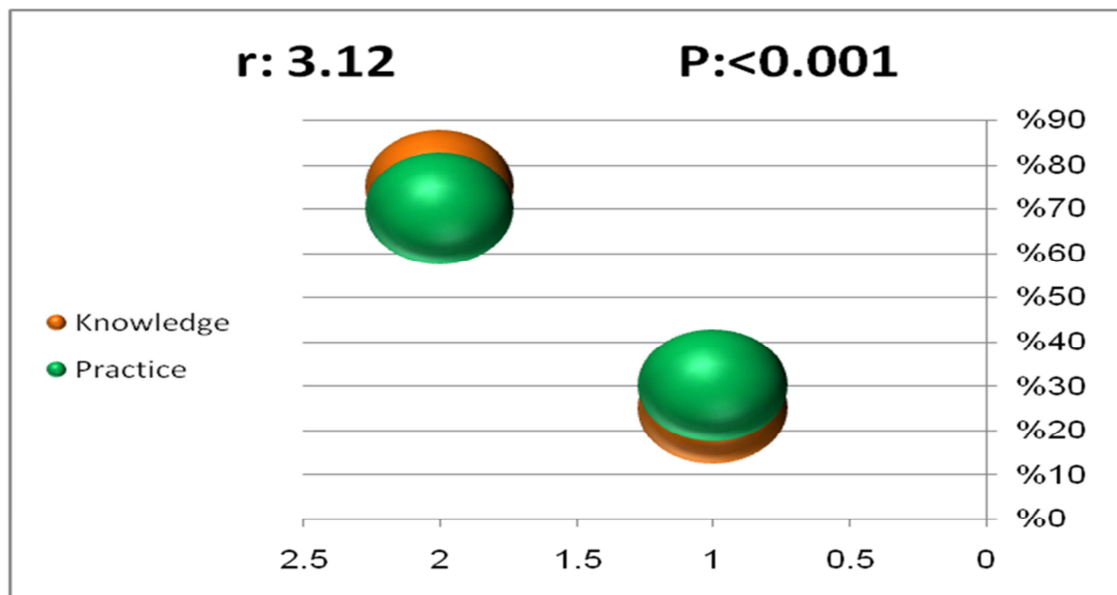


Figure 3. Correlation between mothers' knowledge and practice pre/post feeding protocol.

Figure 3: showed that the mother's knowledge and practice improved post feeding protocol than pre feeding protocol.

Table 6. Correlation between total mother's knowledge, practice and their personal characteristics.

Variables	Total knowledge				Total practice			
	Pre		Post		Pre		Post	
	r	P	r	P	r	P	R	P
Age	3.01	0.02	1.66	<0.05	3.17	0.04	0.44	<0.05
Level of education	3.16	0.04	0.54	<0.05	2.26	0.03	0.27	<0.05
Occupation	4.14	0.03	0.68	<0.05	3.81	0.06	0.94	<0.05

Table 6: revealed that there were statistical significant differences between knowledge and practice of mothers with their personal characteristics post feeding protocol at $P < 0.05$.

4. Discussion

The mothers having infant with cleft lip and palate face many difficulties and troubles regarding feeding of their infant, so that they needed for appropriate and accurate knowledge and practice regarding feeding technique. The aim of the current study was to assess the knowledge and practice of mothers regarding feeding of their infant with cleft lip and cleft palate. Evaluate the effectiveness of feeding protocol on knowledge and practice of mothers having infant with cleft lip and cleft palate. To find out the association between knowledge and practice of mothers having infant with cleft lip and cleft palate with their selected demographic variables.

In relation to personal characteristics of infant the current study table 1 illustrated that, more than half of infant age was from birth to 6 months, with mean age 3.8 ± 3.3 . More than half of infant was boys and first birth order. The more than half of infant was 2-5 kg with mean weight 5.9 ± 1.9 and having cleft lip diagnosis. This finding was agree with the result of (Costello & Ruiz, 2004), (Omo-Aghoja, et al, 2010), & (Dreise, et al, 2011) who found that the more than half of infant was 2-5 kg and have cleft lip diagnosis. This result supported with study done by (Fathy, and Attia., 2017) who found that 56% of infants were aged between 1 to less than 6 months of age, and the total sample mean score of infants' age was 5.7 ± 3.4 months and the mean score of infants' current weight was 5.8 ± 1.9 Kg., 64% of infants were males, 48%, of infants are diagnosed as cleft palate. These result also not agreed with (Jenwitheesuk, and Chowchuen, 2012) who found forty-one percent of the infants had left unilateral complete cleft lip and palate.

According to personal characteristics of mothers the current study table 2 revealed that half of mother's age less than 20 years with mean age at 23.15 ± 2.48 . Also, more than half of mother's education was secondary, and house wife. In addition nearly two third of mothers have from 1-2 sibling number, and more than three third of mothers with in adequate income. Also, half of mothers live in rural areas and had family history of cleft lip and palate. These findings were in the same line with (Fathy, and Attia., 2017) who found that in relation to mothers, 34% of them were illiterate, while 32% were having university education, 62% of them live in rural areas, 48% of them have positive consanguinity. In the other hand the study done by (Jenwitheesuk, and Chowchuen, 2012) who found that (43%) of caregivers was had completed primary education, and worked in agriculture (40%). In addition this result matched with (Ekata, et al., 2017) who represented that in experimental group (56.6%) of sample belongs to rural area. The majority of sample (70%) had 3-4 children. The total sample 30 (100%) were not having history of cleft lip and cleft palate in other children of

family. Also the result was disagree with (Antwi-Kusi, et al., 2015) who mentioned that the majority of sample responded that there weren't have history of cleft palate.

In relation to evaluation of infant feeding reported from their mothers table 3 illustrated that more than half of mothers using complimentary method of feeding their infant. Also, half of mothers complete time of feeding through > 10 minutes. In addition less than half of mothers reported that their infant have vomiting as difficult during feeding, more than half of mother use sitting position during feeding. In the other hand half of mothers stated that their infant have poor appetite and two third of them suffer from stress during feeding. These results were supported by (Silva, and Costa, 2012) who found that only 21.4% of the mothers accomplished breastfed their babies. 98.25% of mothers used bottle feeding with milk and other sucrose liquids at one to ten times frequency. Also study done by (Pandey and Singh 2016) who concluded that spoon feeding was found to be the most common feeding method practiced by parents of children with cleft lip and palate. Also study done by (IzeIyamu and Saheeb 2011) who reported that a syringe, without the needle, is one of feeding device that can be used with infants with a cleft lip and palate. In addition the study done by (Shetty, and Khan, 2016) who reported that children with a cleft lip, cleft palate, or a combined cleft lip and palate were unable to adequately suck and often died of malnutrition, they are also at a high risk for laryngeal penetration and aspiration that can lead to pneumonia. Also the study of (Devi, et al., 2012) who supported that infants with clefts may swallow more air during feeding, especially if the flow of milk is either too slow or too fast. The mother stopping two or three times during the feed to burp the infant, or sitting with the baby in upright position may be helpful. Also this study is in agree with (Le Leche, 2004) and (Cooper-Brown et al., 2008) who reported that the infant must be at upright position to avoid reflux, aspiration and choking. Additionally this position also prevents milk accumulation within the hearing cavity.

Concerning mothers' knowledge regarding cleft lip and palate pre / post feeding protocol table 4 show that there was statistically significant difference between knowledge of mother pre and post feeding protocol at all items $P < 0.05$ except items of complications of cleft lip and palate, long term effect of cleft lip and palate and management of cleft lip and palate at $P < 0.01$. These result was in the same line with study done by (Jenwitheesuk and Chowchuen., 2012) who found that the overall average of knowledge level among caregivers for the specialized care of infant with CLP was good (mean 3.71, $SD \pm 0.81$). Except the mean score about cause of CLP, and treatment guidelines, knowledge about care of infant with CLP was mid level (mean= 3.28, $SD \pm 0.85$). Also the study was done by (El-Shazly, et al, 2010) who mentioned poor mother's knowledge regarding cleft lip and palate.

In relation to distribution of total mothers knowledge pre and post feeding protocol figure 1 illustrated that there were

statistical significant difference between mothers knowledge pre/post feeding protocol, the knowledge of mothers improved post protocol than pre feeding protocol. These result in the same line with study of (Owotade, et al., 2014) who found that the level of educational attainment had a statistically significant effect on the level of awareness and knowledge on CLP, as more educated respondents tend to be more aware and knowledgeable ($P < 0.001$).

Regarding distribution of mother's practice pre and post feeding protocol table 5 showed that there were statistical significant difference between mother's practice pre and post feeding protocol in all items at $p < 0.05$, $p < 0.01$ respectively, except items of preparation for bottle feeding, burping and cleaning mouth. This result was agree with (LEO, 2011) who emphasized that mothers had become more experience and training regarding feeding practice of cleft palate and lip infant after program.

As regard distribution of total mothers practice pre / post feeding protocol figure 2 revealed that there was statistical significant difference between mothers practice pre/post feeding protocol, the practice of mothers improved post than pre feeding protocol. While competent mothers practice pre feeding protocol was 6.7% compare to post feeding protocol was improved to 83.3%. These result matched with study of (Hasanpour, et al., 2017) who shows that Independent t-test showed a significant difference in the mean score of feeding behavior in mothers ($P = 0.020$). Intervention techniques oral feeding can be successful and infants can thrive, enhance their quality of life is critical for early development, until infants are ready for surgery.

As regard correlation between mothers' knowledge and practice pre/post feeding protocol figure 3 showed that the improving of the mother's knowledge and practice post feeding protocol. These study supported by (Lindberg and Berglund., 2014) who concluded that major importance for the mothers to cope with challenges related to feeding. In addition the study done by (Thohinung, and Prathanee, 2016) who reported that the most common information that caregivers needed was feeding intervention, development stimulation (52.60%), prevention of infection, lower respiratory infection and otitis media, as well as providing effective oral intake and sucking and good nutrition. Also the information was useful for feeding planning and providing counseling for new caregivers. These study in the same line with (Ekata, et al., 2017) who showed that in experimental group the mean post-test knowledge score (18.90 ± 0.95) was higher than the mean post-test knowledge score (10.46 ± 1.52) in control group which was found statistically significant at $p < 0.05$. The mean post-test practice score in experimental group was 10.40 ± 1.95 which was higher than the control group 7.00 ± 1.59 and the 't' value was 7.36.

Regarding correlation between total mother's knowledge, practice and their personal characteristics table 6 revealed that there were statistical significant differences between knowledge and practice of mothers post feeding protocol at $p < 0.05$. These result supported by (Adnan& Muniandy,

2012) who mentioned that mothers education level has long been associated with child feeding practices. On the other side the study conducted by (Chidozie, et al, 2013) and (Sriram, et al., 2013) who found that there is no association between knowledge, and practice of feeding and selected socio-demographic variables.

5. Conclusion

The feeding protocol was effective and improved mother's knowledge and practice regarding feeding of their infant with cleft lip and palate.

Recommendation

- The importance of update feeding protocol for mothers having infant with cleft lip and palate.
- Further researches for helping mothers to overcome feeding difficulties regarding their infant with cleft palate and lip.
- Continuous an educational program should be designed and implemented for mothers having infants with cleft lip and cleft palate.

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