

Original Research Article

## **Nutritional Status of Children with Cleft Lip, Cleft Palate and Knowledge of their Mothers at Health Care Centres**

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### **ABSTRACT**

Cleft lip and palate is a congenital anomaly associated with nutritional challenges which has gained its prominence in today's world. Failure in fusing of the tissues of lip or palate together occurs that leads to birth of baby with cleft lip or palate. There is a challenge to meet the nutritional needs in children with cleft lip and palate that lead to feeding complications along with nutritional deficiencies in the growing years. The aim of the study was to assess nutritional status of children with cleft lip and palate. The objectives of the study were to identify the feeding challenges in children with cleft lip and palate and assess nutrition knowledge of mothers at health care centers. Purposive random sampling method was employed to assess 100 children (0- 13 years) with cleft lip and palate at selected hospitals, Bengaluru where the oral facial maxillary surgical corrections were performed. BMI and nutrient intake were assessed using growth charts, 24 hour diet recall method and compared with the recommended dietary allowance with identification of feeding complications. 75% of the population had both cleft lip and palate among which 49 were boys and 26 were girls. Isolated cleft lip and palate was noted only in 10 children among both genders. There were nutritional challenges during feeding with nasal regurgitation being one of the most common complications. A positive correlation was seen between nutrition knowledge and feeding practices ( $p = 0.006$ ) with nutrition knowledge having a strong influence on the feeding practices for their children. Cleft information had an impact on the level of nutrition knowledge at significance of 5% level ( $p = 0.045$ ); there was a significant interaction effect between surgical details and feeding practices that had an impact on the knowledge level of the mothers ( $p = 0.09$ - significant 10% level). The study concluded that role of nutrition, proper education on nutrition and feeding methods in management of cleft lip and palate are an important factor in growth and development of children with cleft lip and palate.

**Key words** – Cleft lip and palate, Surgical details, BMI, Knowledge, feeding practices and nutrition.

### **INTRODUCTION**

Indian sub- continent remains one of the most populous areas of the world with an estimated population of 1.1 billion in India alone. This yields an estimated 24.5 million births per year and the birth prevalence of clefts is somewhere between 27,000 and 33,000 clefts per year. <sup>[1]</sup> The nutritional status of cleft lip and palate children in India has not been given much of importance among the parents.

Cleft lip and palate is a condition occurring usually in children during the 6<sup>th</sup> to 10<sup>th</sup> week of pregnancy, involving the oral cavity and facial structure at extremities such as the bones and tissues of a baby's upper jaw, nose, and mouth that fail to come together to form the roof of the mouth at the time of birth. The exact reasons for the cleft lip/palate condition are unknown but the probable causes for this condition are heredity, poor nutrient intake, smoking during pregnancy or drinking alcohol during

pregnancy, obesity during pregnancy, lack of folic acid during pregnancy, agricultural chemicals like pesticides or pesticide residues and taking certain medicines in early pregnancy, such as some anti-seizure medications and steroid tablets. [2]

Owing to feeding challenges, children with cleft lip and palate have a low nutritional status because they undergo surgeries; have feeding difficulties and hence low nutrient intake. This leads to nutritional deficiencies, imposes great risk of stunted growth, less closure of the scars of the lip or palate and tooth decays. Therefore, it is important to assess the nutritional status of children with cleft lip and palate to observe the growth patterns and nutrient needs since they are prone to be nutritionally deficient in terms of macronutrients (energy, protein, fats and carbohydrates) and micronutrients (calcium, iron, phosphorous). The growth problems of children with cleft lip/ palate have largely been attributed to inadequate nutrition. [3] Hence, it is crucial to overcome nutritional deficiencies and implement nutrition education for the parents to combat feeding challenges to optimize right nutrition for their children.

The objectives of the study were to assess the nutritional status of children with cleft lip and cleft palate, to identify feeding challenges in children with cleft lip/palate and to assess nutrition knowledge of mothers.

## MATERIALS AND METHODS

Purposive random sample of 100 children with cleft lip/ palate of age group 0-13 years with mothers at selected hospitals in Bengaluru were involved in the study. A pre- designed interview schedule was administered to assess the nutritional status, identify the feeding challenges and nutrition knowledge of children with cleft lip/ palate.

The nutritional status assessment included weight, height, present BMI, weighing scale, growth chart given by WHO and medical records of the child to

elicit information. The cut off values given were overweight (> 95th percentile), risk of overweight (85th to < 95<sup>th</sup>), healthy weight (25<sup>th</sup> percentile) and underweight (< 5th percentile). [4] The nutrient intake assessment of child was done from mothers using the standard 24-hour dietary recall method.

Information related to cleft lip and palate, type of cleft, duration of diagnosis, corrective surgeries, family history, substance abuse and radiation during pregnancy was elicited. Information on feeding challenges included swallowing problems, appetite changes and oral hygiene. The knowledge of mothers were assessed on cleft lip/ palate, macro and micronutrients, factors influencing cleft lip / palate, awareness on cleft lip/palate, types and first hand information.

Statistical analysis was done in SPSS (IBM) software (2014 version). Analysis of the data was done using mean standard deviation, correlation between nutrition knowledge, feeding practices and ANOVA to obtain the interaction effect of dependant variable.

## RESULTS AND DISCUSSIONS

Table 1: Socio- demographic profile of parents

Variable	Mother	Father
	Total	Total
	N=100	N=100
<b>Age (years)</b>		
18- 20 years	9	0
21- 25 years	25	6
26- 29 years	24	16
30- 35 years	24	39
36- 39 years	12	17
40- 45 years	2	18
45- 50 years	4	5
<b>Education</b>		
Graduate or post- graduate	42	37
High school diploma	3	14
High school certificate	30	22
Middle school certificate	10	15
Primary school certificate	11	7
Illiterate	4	5
<b>Occupation</b>		
Profession	13	32
Clerical shop owner	1	8
Farmer	1	7
Skilled worker	6	42
Unskilled worker	2	10
Unemployed	77	1
<b>Socio- economic class</b>		
Upper class	11	13
Upper middle class	41	37
Middle/ Lower middle class	37	39
Upper lower class	4	4
Lower class	7	7

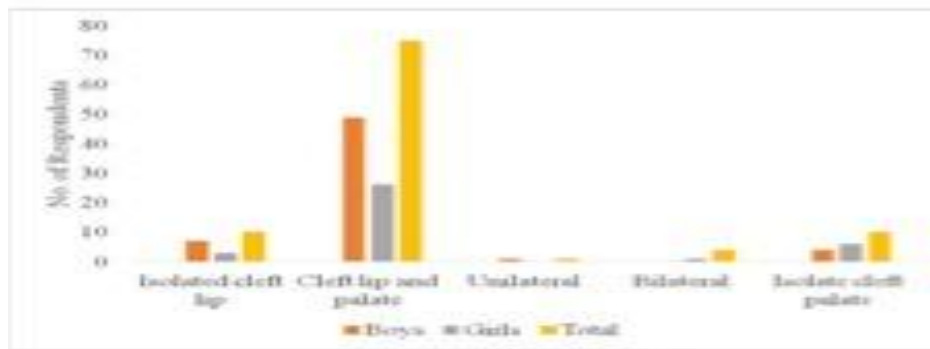
Table 1 represents parents' socio-demographic profile using Kuppuswamy scale (2012). Majority of the parents (42 % mothers, 37 % fathers) were graduates or post- graduates and belonged to upper middle income group.

Table 2 represents the age and gender distribution among the children with cleft lip and palate. Most of the children were boys (64) and girls (36) in the age range of 0- 15 years.

**Table 2: Age and gender distribution**

Age	Boys	Girls	Total
	n= 64	n=36	N=100
0-6 months	7	0	7
6-12 months	20	14	34
2-3 years	10	8	18
4-6 years	6	2	8
7-9 years	15	5	20
10-12years	5	7	12
13-15 years	1	0	1

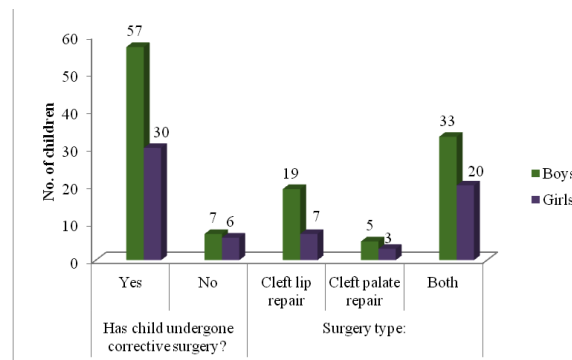
**Information on cleft:**



**Figure 1: Type of cleft**

Figure 1 represents the type of cleft present in children. 75 % of the population had both cleft lip and palate (49 boys and 26 girls). Isolated cleft lip and palate was noted only in 10 children among both genders.

Similar results of incidence of cleft were seen in a study conducted on children with cleft lip or palate stating low incidence of isolated cleft lip in the children. [5]



**Figure 2: Surgical details**

**Table 3 : Detection of cleft and Source of information**

Period of detection of cleft	Boys	Girls	Total
	n=64	n=36	N=100
Before delivery	20	11	31
After delivery	44	25	69
<b>Cleft information</b>			
Doctor	58	34	92
Family member	3	1	4
Friends	1	1	2
Media	2	0	2

Table 3 indicates detection of cleft before / after delivery and source of information about cleft. Out of 100 children, 31 parents of cleft children knew about cleft before delivery through scanning. 92% of the respondents derived information on cleft primarily from doctors. The reason could be attributed to lack of availability of a health care. Diagnosis of cleft prenatally is thought to allow parents a greater opportunity to adjust to the facial difference, prepare for the needs of the infant that allows better preparations for the unique neonatal feeding

requirement of infants with clefts, early planning for surgical repair including location of a cleft team and to improve overall satisfaction with cleft care. [6]

### CLEFT SURGERY INFORMATION

Figure 2 depicts children who have undergone corrective surgeries and its types. Most of them (87) have got their surgeries done initially and followed up later on as they reached their middle childhood.

Table 4: Surgical correction of cleft

Statement	Boys	Girls	Total
	n=64	n=36	n=100
Surgical correction of cleft			
Delayed	9	5	14
Not delayed	55	31	86
Frequency of surgery			
Once in 6 months	23	8	31
Once in a year	14	10	24
Twice in a year	20	12	32
Three times in a year	2	0	2

Table 4 depicts surgical correction of cleft and the frequency at which the surgery was done. 86% of them reported that there was no delay in surgical correction of cleft. Most of them (31) underwent surgery during the initial period of six months - boys (23) and girls (8) respectively while majority (32) twice a year for (20 boys and 12 girls). Only 2 boys and girls underwent corrective surgery three times in a year.

Table 6: BMI for Boys

Age	Ideal height (cm)	Current height (cm)	Ideal weight (kg)	Current weight (kg)	BMI (percentile)
2- 3 years (n= 10)	97.1	78.68 ± 4.49	14.8	10.46 ± 1.64	73.5 ± 12.85
4- 6 years (n= 6)	118.5	110 ± 9.98	20.4	13.03 ± 2.19	20.83 ± 25.53
7- 9 years (n= 15)	134.6	120.8 ± 9.47	28	20.14 ± 4.30	22.93 ± 26.09
10- 12 years (n= 5)	151.1	128.5 ± 8.61	38	24.2 ± 2.40	20.2 ± 17.33
13- 15 years (n= 1)	159	154	43.3	46	70

\* BMI in percentiles as per CDC growth charts

Table 6 depicts the measurements of height, weight and BMI in term of

A similar study revealed that 66.7 % of the children had delay in surgical planning for lip or palate due to the difficulty in gaining weight on affected individuals. [7]

Age and Gender	Ideal height (cm)	Current height (cm)	Ideal weight (kg)	Current weight (kg)	Height for age (percentile)
Boys 0- 6 months n= 7	67.6	61.5 ± 3.81	7.9	6.3 ± 0.71	5.71 ± 1.74
Boys 6- 12 months n= 20	75.7	71.47 ± 4.35	9.6	8.44 ± 1.63	18.75 ± 24.12
Girls 6- 12 months n= 14	74	68.95 ± 6.51	8.9	7.05 ± 1.65	24.64 ± 30.3

\*height for age and weight for age according to CDC growth charts

Table 5 represents the mean anthropometric measurements - height, weight, height for age and weight for age in infants of age group of 0- 6 months and 6- 12 months in boys and girls.

0- 6 months boys' mean height (61.5 cm ± 3.81) and weight (6.3 kg ± 0.71) were relatively lower than the ideal height and weight (75.7 & 9.6) defined as underweight for age.

6-12 months boys' height and weight for age (18.75 ± 24.12; 21.75 ± 25.65) were reported as risk of underweight. The height and weight for age percentiles (24.64 ± 30.3; 12.5<sup>th</sup> ± 15.55) for girls were lower than the ideal height and weight (74 & 8.9) considered as underweight for age.

percentiles for the respective age groups in boys. As per the BMI percentiles, 4- 6 year

old boys were underweight ( $20.83^{\text{th}} \pm 25.53$ ) and in 2- 3 year boys were normal ( $73.5^{\text{th}} \pm 12.85$ ). Whereas in 7- 9 and 10- 12 years

age groups boys did not reach a healthy weight ( $20.2 \pm 17.33$ ;  $22.93 \pm 26.09$ ) compared to 13- 15 years ( $70^{\text{th}}$ )

**Table 6.1 : BMI for Girls**

Age	Ideal height (cm)	Current height (cm)	Ideal weight (kg)	Current weight (kg)	BMI (percentile)
2- 3 years (n= 8)	98.2	79 ± 6.3	14.4	8.78 ± 2.27	57.5 ± 22.22
4- 6 years (n= 2)	117.55	97 ± 2	20	12.5 ± 4.5	55 ± 30
7- 9 years (n= 5)	135	127.2 ± 6.58	27.6	28.46 ± 8.09	40.85 ± 33.6
10- 12 years (n= 7)	150.2	132.71 ± 7.06	39	24.78 ± 6.89	24.42 ± 24.1

\* BMI in percentiles as per CDC growth charts

Table 6.1 represents the measurements of height, weight and BMI in term of percentiles for the respective age groups in girls. As per BMI percentiles, girls in the age range of 2- 12 years were well nourished.

Cleft children have a fluctuation of weight and height in them when compared with the ideal values due to occurrence of

susceptible infections during feeding and the attitude of mothers towards feeding their children with cleft as a reason. [8] A study on children regarding height and weight on cleft children reported that girls have a better growth than boys at birth due to presence of cleft lip only as another reason. [9]

## NUTRITIONAL ADEQUACY OF DIET

Table 7: Mean nutrient intake in 1-3, 4 -6 and 7-9 years

NUTRIENTS	1- 3 years (N= 32)				4- 6 years (N= 8)			7- 9 years (N= 20)				
	RDA	Boys (n= 20)		Girls (n= 12)		Boys (n= 6)		Girls (n= 2)		Boys (n= 15)		Girls (n= 5)
		Mean Intake	Mean Intake	RDA	Mean Intake	Mean Intake	RDA	Mean Intake	Mean Intake	Mean Intake	Mean Intake	
Energy (kcal)	1060	590.12 ± 259.9	595.12 ± 259.90	1350	735.41 ± 197.59	406.6 ± 80.3	1690	792.57 ± 311.52	803.78 ± 252.25			
Protein (g/d)	16.7	20.56 ± 2.92	19.12 ± 9.90	20.1	19.93 ± 4.62	12.71 ± 0.67	29.5	32.59 ± 25.72	27.48 ± 17.13			
Carbohydrates (g/d)	159	71.25 ± 36.18	82.79 ± 15.41	202.5	92.53 ± 36.05	75.57 ± 6.27	253.5	104.47 ± 30.06	122.57 ± 14.87			
Fat (g/d)	27	24.24 ± 10.79	22.77 ± 8.29	25	35.18 ± 17.02	17.9 ± 2	30	30.69 ± 15.67	30.48 ± 10.47			
Calcium (mg/d)	600	328.35 ± 103.43	282.67 ± 106.61	600	280.76 ± 129.31	283.2 ± 12.2	600	249.76 ± 126.71	226.38 ± 39.78			
Iron (mg/d)	9	5.23 ± 4.98	13.35 ± 33.11	13	5.56 ± 5.66	2.96 ± 0.26	16	6.72 ± 6.43	5.21 ± 1.09			
Vitamin A (IU)	400	415.38 ± 374.89	796.24 ± 967.20	400	714.2 ± 658.93	202.8 ± 2.4	600	851.2 ± 1072.52	315.38 ± 147.29			

\* Recommended dietary allowances (RDA) for Indians formulated by ICMR (2004)

The nutrient intake was recorded for children from 1- 15 years. The infants (0-6 and 6-12 months) were fed with breast milk.

As depicted in table irrespective of gender, the mean energy, carbohydrates, proteins and fat intake was lesser than the recommended nutrient intake in the 1-3 and

4-6 years as compared to 7-9 years age. Calcium and iron intake was not remarkably met in both boys and girls across age groups. Vitamin A were better met in both the genders with relatively higher or greater than RDA in boys than girls.

**Table 7.1 Mean nutrient intake in 10- 12 years and 13- 15 years children**

NUTRIENTS	Boys (N= 4 )		Girls (N= 6)	
	10-12 years (n= 4 )		10- 12 years (n= 6)	
	RDA	Mean Intake	RDA	Mean Intake
Energy (kcal)	2190	933 ± 298.23	2010	936.75 ± 359.18
Protein (g/d)	39.9	32.25 ± 12.46	40.4	61.61 ± 55.95
Carbohydrates (g/d)	328.5	142.2 ± 32.58	301.5	143.2 ± 29.08
Fat (g/d)	35	38.57 ± 68.11	35	31.17 ± 17.82
Calcium (mg/d)	800	292.55 ± 103.73	800	351.86 ± 203.05
Iron (mg/d)	21	5.47 ± 1.25	27	5.99 ± 1.39
Vitamin A ( IU)	600	1169.1 ± 798.26	600	1082.83 ± 988.30

\* Recommended dietary allowances (RDA) for Indians formulated by ICMR (2004)

From table it was observed that energy and carbohydrate intake was lower than the RDA in both boys and girls across age groups. Protein was higher than the recommended value among 10- 12 years (61.61g) and 13- 15 year old boy (57.7 g). Essential micronutrients calcium and iron intake was remarkably less irrespective of gender. However, vitamin A intake was higher compared to RDA.

### FEEDING PRACTICES

Table 8 represents type of feeds provided by the mothers of children with cleft lip/palate. As reflected in table 6, maximum children were provided with formula feed (29), breast milk (26) and cow's milk (17). Most

of the mothers practiced spoon feeding (38) followed by bottle feeding (26) and feeding in glass (12).

**Table 8 : Feeding practice**

Statements	Boys	Girls	N= 100 Total
	n=64	n=36	
<b>Type of feed provided</b>			
Breast milk	23	3	26
Formula feed	14	15	29
Packet milk	11	13	24
Semi-liquid	4	0	4
Cow's milk	12	5	17
<b>Type of feeding practiced</b>			
Breastfeeding	8	1	9
Spoon feeding	24	14	38
Glass feeding	6	6	12
Paladai	6	5	11
Cups	2	2	4
Bottle feeding	18	8	26

**Table 9: Feeding complications Pre and Post surgery**

Complication	Pre surgery			Post surgery		
	Boys n=64	Girls n=36	Total N= 100	Boys n=64	Girls n=36	Total N= 100
Sucking difficulty	48	14	34	3	0	3
Vomiting	17	5	22	2	2	4
Swallowing difficulty	14	13	27	4	0	4
Breathlessness	13	3	16	6	2	8
Nasal regurgitation	35	23	58	5	2	7
Any other	2	1	3	4	1	5

Table 9 depicts the pre and post surgery feeding complications.

Prior to surgery, majority of the children had nasal regurgitation (58%), sucking difficulty (34%) due to uncoordinated sucking, swallowing difficulty (27%) and vomiting (22%).

Breathlessness was seen in 16% pre surgery cases as compared to 8% post surgery cases. The reason could be attributed to involvement of palate.

Only 4% of the population had episodes of vomiting post surgery. Apart from the complications mentioned, other



complications included otitis media (ear infections) and speech problems (8).

Table 10 : Oral hygiene

Statement	Boys	Girls	Total
	n=64	n=36	N=100
Practice of a good oral hygiene			
Yes	60	35	95
No	4	1	5
Importance of rinsing child's mouth			
Agree	59	34	93
Slightly agree	4	2	6
Disagree	1	0	1

Table 10 represents the good oral hygiene and attitude towards rinsing their child's mouth after each meal.

As evident, majority of the caregivers (93%) agreed that rinsing children's mouth is important. This was reflected in 95% practicing good oral hygiene

### KNOWLEDGE ON CLEFT AND NUTRITION

Table 11: Feeding orientation and Source of information

Statement	Boys n=64	Girls n=36	Total N= 100
<b>Feeding orientation given</b>			
Yes	59	28	87
No	5	8	13
<b>b. If yes,</b>			
Nurses	1	9	10
Dietitians	1	0	1
Doctors	57	18	75
Health worker	0	0	0
Any other	0	1	1
<b>Source of information</b>			
Books	5	2	7
Maternity ward	28	17	45
Rehabilitative centres	31	17	48

Table 11 depicts the feeding orientation acquired after the diagnosis of cleft for their child and the source of information derived from.

Majority of the study population (87) received feeding orientation maximum from rehabilitative centers (48), maternity ward (45). Prime source of information was derived from doctors (75) followed by nurses (10%).

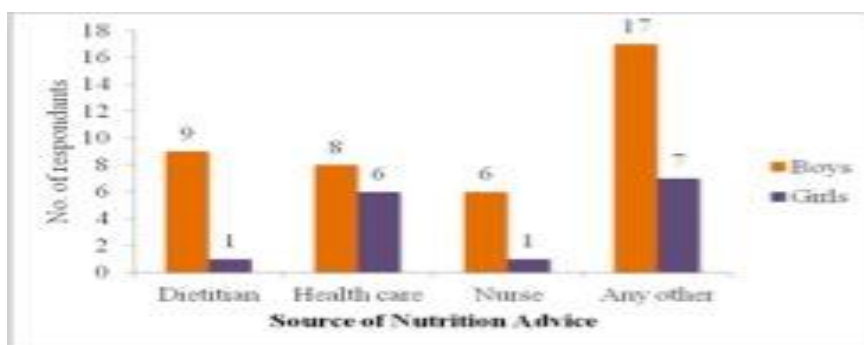


Figure 3 : Source of Nutrition Advice

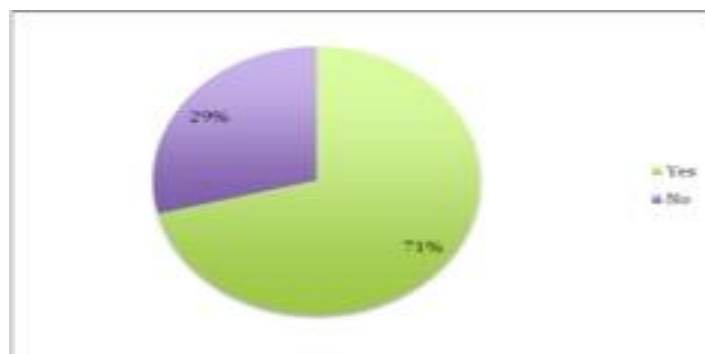


Figure 3.1 Nutrition monitoring

Figure 3 and 3.1 depicts the number of parents of children who derived source of

nutrition advice and the process of nutrition monitoring.

The prime source of nutrition advice was given by health care (14) followed by dietitian (10), nurse (7) and any other (24). The other sources were obtained from cleft surgeons, pediatricians and paedodontists. 71 % of the parents followed nutrition monitoring for their child.

Periodic monitoring of the feedings by a capacitated professional may diminish delay in development as well as difficulties related to weight gain in children with craniofacial anomalies. [10,11]

Table 12: Knowledge about Cleft

Statement	Boys n= 64	Girls n= 36	Total N= 100
<b>Cleft lip/ palate is</b>			
Abnormal condition			
Associated with -			
Lip only	4	1	5
Palate only	1	2	3
<b>Both</b>	<b>35</b>	<b>27</b>	<b>62</b>
Don't know	24	6	30
<b>Types of clefts present</b>			
Cleft lip	3	0	3
Cleft palate	0	0	0
Cleft lip and palate	9	3	12
<b>All of them</b>	<b>37</b>	<b>25</b>	<b>62</b>
Don't know	15	8	23

Table 12 represents the knowledge about cleft and the types of cleft among the mothers. 62 % of the population knew about cleft lip/ palate and its types.

Table 13: Importance of nutrition

Statement	Boys n= 64	Girls n= 36	Total N=100
<b>Nutrition is important</b>			
Agree	61	35	96
Slightly agree	3	1	4
<b>Nutrient you feel is important for your child</b>			
Carbohydrates	2	0	2
Proteins	2	0	2
Fats	1	1	2
Vitamins	4	0	4
Minerals	2	1	3
<b>All of them</b>	<b>53</b>	<b>34</b>	<b>87</b>

Table 13 depicts the awareness on importance of nutrition and the knowledge of the nutrients in the mothers of cleft children.

96% of the study population agreed that nutrition is important for their child in boys (61) and girls (35) respectively. 87% of the study population (53 boys and 34 girls) felt that all the nutrients are important for their child.

Table 14 : Macronutrients

Statements	Boys n= 64	Girls n= 36	Total N=100
<b>Nutrient that gives energy</b>			
<b>Carbohydrates</b>	<b>18</b>	<b>14</b>	<b>32</b>
Vitamins	24	10	34
Minerals	15	6	21
None of them	7	6	13
<b>Nutrient that is body building</b>			
<b>Proteins</b>	<b>33</b>	<b>22</b>	<b>55</b>
Carbohydrates	11	6	17
Vitamins	12	3	15
None of the above	8	5	13
<b>Fats important for body</b>			
Agree	41	20	61
Slightly agree	17	8	25
Disagree	6	8	14

Table 14 represents the knowledge on the macronutrients - carbohydrates, proteins and fats and their role in the body. Only 32 % were aware that carbohydrates provide energy while 55% associated protein with body building. 61 % of them agreed that fats are required for the body.

Table 15 : Micronutrients

Statement	Boys n= 64	Girls n= 36	Total N=100
<b>Vitamin which builds strong bones</b>			
Vitamin A	11	6	17
<b>Vitamin D</b>	<b>32</b>	<b>19</b>	<b>51</b>
Vitamin E	5	6	11
Vitamin C	14	7	21
<b>Nutrient important for bones</b>			
<b>Calcium</b>	<b>55</b>	<b>28</b>	<b>83</b>
Protein	4	2	6
Zinc	2	1	3
None of the above	3	5	8

Table 15 depicts the knowledge on the micronutrients vitamins and minerals. 51% and 83% of the caregivers knew the importance of vitamin D and Calcium in building strong bones.

## ASSOCIATION OF KNOWLEDGE, INFORMATION, SURGICAL INFORMATION AND PRACTICE

Table 16: Association of Knowledge and Feeding Practice

Variable	r	P	Significance
Knowledge	0.271**	0.006	S
Practice	0.271**	0.006	S
<b>Inference Variables are associated- Significant</b>			

p >0.05 – Not significant; p< 0.05 – Significant; p< 0.01 – High significant

\*Significant at 0.01 level



A positive significant correlation between knowledge and feeding practices ( $r = 0.271$ ,  $p = 0.006$ ) was seen. A strong influence of knowledge on the feeding practices for their children was observed in the study population.

Similar results reported that educational attainment, knowledge and response provided by the respondents had a positive correlation ( $p < 0.05$ ) that resulted in parents having knowledge about the treatment strategies and feeding practices among their children. [12]

Table 17: Association of Knowledge, Cleft information, Surgical information and Feeding practice

Knowledge		
Source	F	Sig.
Information	2.323	0.092*
Surgical information	3.334	0.045*
Feeding practice	2.035	0.137
Information and surgical details	0.876	0.545
Information and feeding practice	1.909	0.180
Surgical details and feeding practice	2.566	0.090*

\* $p > 0.05$  – Significant;  $p < 0.05$  – Significant;  $p < 0.01$  – High significant

Table 17 represents influence of knowledge on information of cleft, surgical data and feeding practices.

It was seen that the information on cleft had an impact on the knowledge level (significant at 10 % level). Parents of children who had got their cleft surgery done showed better level of knowledge ( $p = 0.045$  significant at 5% level).

It was observed that a significant interaction effect between surgical data and feeding practices had an impact on knowledge level ( $p = 0.09$ , significant at 10% level).

Similar study on knowledge and cultural beliefs with reference to management of oral facial clefts in Nigeria stated that the knowledge and beliefs in parents of clefts affects the potential care they give for their children and this could even hinder from obtaining the required treatment further. [12]

## DISCUSSION

The detection of cleft before / after delivery and source of information about cleft is an important factor. It was reported that total of 69 parents (44 boys and 25 girls) knew their child had cleft after delivery as compared to 31 parents of cleft children prior to delivery through scanning. 92% of parents' prime source of information on cleft was from doctors at health care centres associated with non- governmental organizations that have medical care and facilities. Majority of them (87) did not have a family history of cleft. However, 5 of them had a history of cleft from maternal side while few children from paternal side.

The nutritional status were determined using body mass index, height and weight for age in percentiles of children with cleft lip and palate that showed relatively low or normal for different age groups. Similarly nutrient intake assessed using dietary recall method was not in par with reference to children with cleft lip and palate due to feeding challenges.

Diagnosis of cleft prenatally is thought to allow parents a greater opportunity to adjust to the facial difference and prepare for the needs of the infant. It also allows better preparations for the unique neonatal feeding requirement of infants with clefts, early planning for surgical repair including location of a cleft team and to improve overall satisfaction with cleft care. [6]

Early feeding guidelines for babies with oral clefts help ensure the fulfilment of nutritional needs and avoid or minimize difficulties with feeding. [13] It was reported that inclusion of encouraging breastfeeding to all cases, apart from use of other resources whenever necessary such as feeding bottles, cups, spoons and droppers were suggested. [14]

## CONCLUSION

The growth and development of child with cleft lip or palate need a lot of care through good nutrition, health and hygiene especially during growing years.

The study contributed with identification of reasons for nutritional challenges, assessment of pre and post surgical planning, feeding practices, oral hygiene and nutrition knowledge among the parents. Hence it is very crucial to implement right nutrition intervention coupled with imparting knowledge to care givers to attain optimal health in children with cleft lip and palate.

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#### REFERENCES

1. Mossey P, Little J. Addressing the challenges of cleft lip and palate research in India. Indian journal of plastic surgery: official publication of the Association of Plastic Surgeons of India. 2009 Oct;42(Suppl):S9.
2. Prescott NJ, Winter RM, Malcolm S. Maternal MTHFR genotype contributes to the risk of non-syndromic cleft lip and palate. Journal of medical genetics. 2002 May 1;39(5):368-9.
3. Gopinath VK. Assessment of nutrient intake in cleft lip and palate children after surgical correction. The Malaysian journal of medical sciences: MJMS. 2013 Oct;20(5):61.
4. Barlow and Dietz. Obesity evaluation and treatment. Journal of paediatrics. 1998;102 (3):e29
5. Gopinath VK, Muda WA. Assessment of growth and feeding practices in children with cleft lip and palate. Southeast Asian J Trop Med Public Health. 2005 Jan;36(1):254
6. Strauss RP, Sharp MC, Lorch SC, Kachalia B. Physicians and the communication of "bad news": parent experiences of being informed of their child's cleft lip and/or palate. Pediatrics. 1995 Jul 1;96(1):82-9.
7. Paradise, J. L. and B. J. McWilliams .Simplified feeder for infants with cleft palate. Pediatrics. 1974; 53:566-568.
8. Ranalli DN, Mazaheri M. Height-weight growth of cleft children, birth to six years. The Cleft palate journal. 1975 Oct 1; 12(4):400-4.
9. Reddy SG, Reddy RR, Bronkhorst EM, Prasad R, Ettema AM, Sailer HF, Bergé SJ. Incidence of cleft lip and palate in the state of Andhra Pradesh, South India. Indian journal of plastic surgery: official publication of the Association of Plastic Surgeons of India. 2010 Jul; 43(2):184.
10. Richard, M .Weight comparisons of infants with complete cleft lip and palate. Pediatric Nursing; 1994; 20:191-196.
11. Pandaya, A. N. and J. G. Boorman. Failure to thrive in babies with cleft lip and palate. British journal of Plastic Surgery; 2001; 54:471-475.
12. Oginni, F. O, Asuku, M. E., Oladele, A. O, Obuekwe, O. N, & Nnabuko, R. E. Knowledge and cultural beliefs about the etiology and management of orofacial clefts in Nigeria's major ethnic groups. The Cleft Palate-Craniofacial Journal; 2010; 47(4), 327-334.
13. Wyszynski DF, editor. Cleft lip and palate: from origin to treatment. Oxford University Press; 2002.
14. WHO Human Genetics Programme; Global strategies to reduce the health-care burden of craniofacial anomalies: report of WHO meetings on international collaborative research on craniofacial anomalies. World Health Organization, Geneva; 2002

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