pISSN 2349-3283 | eISSN 2349-3291

Original Research Article

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20190448

The prevalence of malnutrition in children with cleft lip and cleft palate: a case-control study

Shashidhar V.¹, Sharanabasappa S. Dhanwadkar^{1*}, Ashwini Kumari N. B.¹, Ravikumar Kurle², Rakesh A. Navale¹

Received: 17 January 2019 Accepted: 29 January 2019

*Correspondence:

Dr. Sharanabasappa S. Dhanwadkar, E-mail: drsharan77@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Children with cleft lip and cleft palate come across lot of impediment, hurdles in society. There are several social factors which hinders the proper nourishment of CL only, CP or CLP children, so majority of them tend to suffer malnutrition due to lack of standard care especially from their parents and society. Due to even low socioeconomic status, impact on growth of these children is vexatious. However potential risk of malnutrition is particularly more during early childhood. Moreover, till date there are not much significant data on malnutrition in CL only, CP or CLP children. The aim of the study was to assess the prevalence of malnutrition in non syndromic CL only, CP or CLP in south India.

Methods: Anthropometric parameters weight for age z score (WAZ), height for age z score (HAZ), of children with CLP were compared with age matched controls.

Results: Prevalence of PEM and stunting for cleft group were 40% and 21.3% respectively compared to 33.33% and 17.33% for the control. Differences in the underweight, and stunting between the two groups were not statistically significant (χ^2 =2.83, p value=0.58, and χ^2 =1.48, p value=0.69 respectively).

Conclusions: There is no statistically significant difference in the occurrence of malnutrition in children with non-syndromic cleft lip and Palate compared with control.

Keywords: Cleft lip-CL, Cleft lip and cleft palate-CLP, Cleft palate-CP, Height for age, Malnutrition, Weight for age

INTRODUCTION

The abnormality in oro-facial development during intrauterine development leads to various congenital anomaly, however the commonest deformity reported worldwide is cleft lip with or without cleft in palate or both CLP. There are several social factors which hinders the proper nourishment of CL only, CP or CLP children, so majority of them tend to suffer malnutrition due to lack of standard care especially from their parents and society.¹ The defects can be unilateral, bilateral , complete or incomplete clefts.² The incidence reported is 1 in 700 to 4 per 1000 live birth.^{3,4} Children with cleft lip and cleft palate often have associated anomalies, particularly the dental size, shape and position of the teeth. Due to presence of orofacial deformity most of these children have difficulties in speech, social interaction and feeding difficulties. The discouragement with facial appearance leads to reduced peer relationships, self-esteem and intellectual competence.⁵

¹Department of Pediatrics, ESIC Medical College, Gulbarga, Karnataka, India

²Department of Community Medicine, M. R. Medical College, Gulbarga, Karnataka, India

Children with CP or CLP are more prone to malnutrition compared to those with only cleft lip. The prevalence of malnutrition among infants with CP±L in the literature varies between 30 and 50%. However, information on the prevalence of malnutrition among infants with CP±L in India is rare.

The growth impairment in these children is predominantly due to inability to feed or to take in nutrients starting from the first month of life and due to recurrent infection of the upper airways, middle ear.

Even though most of the CL, CP, or CLP often have a normal genetic growth potential the lag in growth is due to insufficient nutrition intake, environmental and social factors play a major role in nourishment of these children.

Malnutrition in these children with CP±L is majorly associated with feeding difficulties including the failure to generate sufficient suction pressure during feeding hence affecting the attachment to the breast/artificial nipple, milk extraction, bolus organization and retention of the bolus before swallow initiation.⁷

To explore the influence and severity of cleft type on the height, weight and head circumference of cleft patients, and to compare height and weight measurements of cleft patients with that of non-cleft subjects, in order to determine if a significant difference exists between normal children and those affected with clefts.

Aim is to study the prevalence of malnutrition in children with cleft lip, cleft palate or CLP.

METHODS

The study was conducted at ESIC Medical College, Gulbarga, Karnataka, India.

Reasons for doing study: There are already existing convincing evidences that shows Indian children are already suffering from malnutrition. However, the presence of cleft lip and palate (CLP) or cleft palate only in a child may adversely affect his or her nutritional status if special care is not given. Children face lots of difficulties in the society.

In India it is seen as social stigma so there is lack of care leading to malnutrition and recurrent infection as malnutrition and infection are interlinked as malnutrition is primary cause of immunodeficiency.

Potential risk of malnutrition is particularly high during early childhood. There is paucity of indigenous data on the prevalence of malnutrition in children with CLP. The aim of the study was to assess the prevalence of malnutrition and anemia in children with non syndromic CLP.

Study population involved children with cleft lip only, cleft palate or CLP who attended ESIC Medical College for Mission Smile International camp.

Sample size: 150 (Case-75 and Control-75).

Sample technique: a case-control study.

Data collection: Interview study and observation of parameter.

Tools: Clinical parameter-weight, height.

Inclusion criteria

 All children with cleft lip and palate attending Mission Smile camp.

Exclusion criteria

- Presence of major congenital malformation
- Seriously ill children are excluded.

All children who are attending the Mission Smile camp which is conducted for 5 days in ESIC Medical College, Gulbarga. Informed consent will be obtained from all mothers.

Clinical parameter including weight for age, height for age, classification of malnutrition according to IAP classification and water low classification.

Statistical analysis

 χ^2 , Scheffe multiple comparison. The data analysis was done by descriptive and inferential statistics using the Statistical Package for Social Scientist (SPSS) version 20.0. Bivariate analysis using Pearson's chi square (χ^2) was used to compare categorical variables for significance of difference in the cleft and control groups. A probability (p) value of less than 0.05 was set as level of significance.

RESULTS

A total of 150 children were studied 75 cases and 75 controls. Six children with cleft lip and palate and associated congenital heart disease were seen and excluded. The age range for the cleft group is 6 to 60 months while for the control group, the age ranges from 6 to 60 months. Age and gender distribution of the study population is shown in the Table 1 and 2. Majority of the children in the study group with CL, CP or CLP and the control group were between the age group of less than 1 year or 1-2 years. However, the least children were in age group of 4-5 years. The result analysis between the two groups (Table 1).

Table 1: Distribution of children based on age with cleft lip only or CP, CLP compared with normal control subjects.

Age in years	Case	Percentage	Control	Percentage	P value
<1	27	36.0	23	30.67	0.65
1-2	25	33.3	29	38.67	0.65
2-3	16	21.3	12	16	0.65
3-4	6	8.0	8	10.66	0.65
4-5	1	1.3	3	4	0.65
Total	75	100.0	75	100	

 χ^2 =2.47, P>0.05: insignificant.

The distribution of male and female in the two group either study or control showed that female children, were comparatively in higher proportion with analysis between the groups (Table 2). Based on IAP classification all the children belonging to either study group or control group is being classified into grades of malnutrition. However, majority of children nearly around 60% belongs to normal, in study group grade I and grade II malnutrition were around 12% and 14.7% (Table 3).

Table 2: Distribution of children based on gender with CL only, CP or CLP; comparison in percentage with control subjects.

Gender	Case	Percentage	Control	Percentage
Female	39	52.0	42	56
Male	36	48.0	33	44
Total	75	100.0	75	100

 χ^2 =0.24, P>0.05: insignificant.

Table 3: Distribution of children based on malnutrition according to Indian Academy of Pediatrics PEM classification.

Malnutrition	Case	Percentage	Control	Percentage	P value
Normal	45	60.0	50	66.67	0.58
Grade I	9	12.0	12	16	0.58
Grade II	11	14.7	8	10.67	0.58
Grade III	8	10.7	4	5.33	0.58
Grade IV	2	2.7	1	1.33	0.58
Total	75	100.0	75	100.0	

 χ^2 =2.83, P>0.05: insignificant.

Table 4: Distribution of children based on stunting.

Stunting	Case	Percentage	Control	Percentage	P value
Grade I	6	8.0	5	6.67	0.69
Grade II	7	9.3	3	4.0	0.69
Grade III	3	4.0	1	1.33	0.69
Normal	59	78.7	66	88	0.69
Total	75	100.0	75	100.0	

 χ^2 =1.48, P>0.05: insignificant.

Malnutrition classified based on height for age according to water low classification, in case group around 21.3% and in control group 12% were stunted (Table 4).

DISCUSSION

The analysis of this study showed that the prevalence of underweight is 40% and stunting is 21.3% in the cleft group was comparatively higher than control group underweight-33.33%, stunting-12%. The difference was

however not statistically significant since p value>0.05 (p=0.58 and 0.69).

Even the result analysis done by Barakati and Alkofide in their work on growth status of Saudi patients with cleft lip and palate has comparatively same values. The underweight prevalence in the cleft group is similar to a prevalence of 30.5% reported from a large series study in South Africa. The prevalence of underweight and stunting found in the cleft group in this study are similar

to the national figure for Nigerian children of 27% underweight and 12% wasting. 10 The higher prevalence of stunting in cleft group (21.3%) in present study compared to control group (12%), although not statistically significant, p=0.69. While the values for both groups are much lower than the national figure for Nigerian children of 46%, they are comparable to a prevalence of stunting of 27% reported in a study on the nutritional status of primary school children in this environment.¹⁰ Usually, children belonging to lower socioeconomic status has higher prevalence of stunting that may be the reason for higher prevalence in present study. 11 The variability of 17% less in underweight prevalence between the cleft group and a similar control group reported in the above study is twice the difference of 8% reduction in the underweight prevalence between the cleft and the control groups of this study. This may perhaps reflect the difference in the age- group studied as over 90% of the cleft population in the above mentioned South African study are infants in whom the nutritional effects of cleft are most marked. The lower prevalence of stunting found in both groups compared to the above study may however be partly explained by the fact that the prevalence of stunting in the first year of life is low but increases with age. 12

CONCLUSION

The prevalence of underweight and stunting in children with non-syndromic cleft lip±palate or cleft palate only were clinically higher although not statistically significantly different when compared to that of a suitably matched control. Children with cleft deformity however had a lower prevalence of breastfeeding but a higher prevalence of bottle feeding with infant formula which may account for the comparable prevalence of malnutrition between the two groups. Despite the limitations of this study, children born with cleft lip and palate are subject of discrimination by the society and this puts them at great disadvantage. Hence, they tend to suffer malnutrition due to the lack of quality care especially from their parents and society at-large. This study is a contribution addressing malnutrition and has shown that bottle feeding with infant formula ameliorated malnutrition in children with CLP.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

 Esimai OA, Ojofeitimi EO, Oyebowale OM. Sociocultural practices influencing under five

- nutritional status in urban community in Osun State, Nigeria. Nutr Health. 2001;15:41-6.
- Tolarova MM. Pediatric cleft lip and palate. Available at: http://emedicine.medscape.com/article/995535overview.
- 3. Vanderas AP. Incidence of cleft lip, cleft palate and cleft lip and cleft palate among races. Cleft Palate J. 1987;3:216-25.
- Agbernorku P, Agbernorku M, Iddi A, Abude F, Sefenu R, Matondo P, et al. A study of cleft lip/palate in a community in the South East of Ghana. Eur J Plastic Surg. 2011;34:267-72.
- 5. Pope AW, Snyder HT. Psychosocial adjustment in children and adolescents with a craniofacial anomaly: Age and sex patterns. Cleft Palate Craniofacial J. 2005;42:349-54.
- Gilham JC, Anandi S, Bullen PJ. Antenatal detection of cleft lip with or without cleft palate: Incidence of associated chromosomal and structural anomalies. Ultrasound Obstetr Gynecol. 2009;34:410-5.
- 7. Tabari AK, Hatefi S, Mohajerzadeh L, Hassas-Yegarneh S. An assessment of preoperative and postoperative nutritional malnutrition in cleft lip and palate children in Uganda. Eur J Plast Surg. 2012;35(4):273-6.
- 8. Barakati SF, Alkofide EA. Growth status of Saudi patients with cleft lip and palate. Saudi Med J. 2002;23:823-7.
- 9. Lazarus DD, Hudson DA, Fleming AN, Goddard EA, Fernandes DB. Are children with clefts underweight for age at the time of primary surgery? Plast Reconstr Surg. 1999;103(6):1624-9.
- 10. Oninla SO, Owa JA, Onayade AA, Taiwo O. Comparative study of nutritional status of urban and rural Nigerian children. J Trop Paed. 2006;53:39-43.
- 11. Jooste PL, Langenhoven ML, Kriek JA, Kunneke E, Nyaphisi M, Sharp B. Nutritional status of rural children in the Lesotho highlands. E Afr Med J. 1997;74:680-8.
- 12. Zoakah AI, Idoko LO, Okoronkwo MO, Adeleke OA. Prevalence of malnutrition using z-scores and absolute values in children under five years of age in Utan village, Jos, Plateau State, Nigeria. E Afr Med J. 2000;77:123-6.

Cite this article as: Shashidhar V, Dhanwadkar SS, Kumari ANB, Kurle R, Navale RA. The prevalence of malnutrition in children with cleft lip and cleft palate: a case-control study. Int J Contemp Pediatr 2019;6:445-8.