Oral Health Status and Oral Impacts on Quality of Life in Early Adolescent Cleft Patients

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Objective: To determine the levels of dental caries, periodontal disease and oral health-related quality of life in children with cleft lip and/or cleft palate compared to non-cleft controls.
Material and Method: This cross-sectional study was conducted in Khon Kaen, Thailand. Subjects included 68 oral cleft and 118 non-cleft individuals aged 10-14 years, who were interviewed using the Child-Oral Impacts on Daily Performance (Child-OIDP) Index and received oral examinations.
Results: Decayed, missing and filled teeth (DMFT) index in permanent teeth, plaque index (PI), and gingival index (GI) scores were significantly higher in the children with cleft than in the controls. However, there was no significant difference in caries prevalence and decayed, missing and filled teeth (dmft) index in primary teeth between comparison groups. The prevalence of oral impacts on Speaking and Smiling was significantly higher in the cleft children than non-cleft controls. The mean impact score between both groups were not significantly different, but the cleft children with impacts had a significantly higher mean impact score (11.9) than did the controls (8.6). The impact score in the cleft children was high for speaking (4.5), emotion control (4.2), eating (3.4) and relaxing (3.4) activities. The main causes of these impacts included having oro-nasal fistula, having orthodontics appliance, position of teeth and deformity of mouth or face.
Conclusion: The cleft children had higher levels of dental caries and gingivitis, and poorer oral hygiene than the controls. They also had lower quality of life than the controls in most performances with different perceived causes.

Keywords: Cleft lip and palate, Oral health status, Oral health related quality of life

Cleft lip (CL) with or without cleft palate (CL/P) and isolated cleft palate (CP) are serious birth defect, which on a worldwide level occurs approximately 1 in every 600 new born babies. The incidence of births with cleft lip and palate (CLP) varies by geographic region, affecting approximately 1.3 of every 1,000 live births in Asian population[1,2]. The incidence of CLP in Thailand reported by Chuangsuwanich et al, in a retrospective, hospital-based study of 30,326 live births in Bangkok, found an incidence of 1.62 per 1,000[3]. Two other studies in the southern[4,5] and northeastern provinces[4,5] of Thailand also found a similar incidence of 1.10 and 1.59 per 1,000 live births, respectively. The highest incidence was observed in a study by Ruangsitt

et al, who collected birth data from hospitals in Khon Kaen; the reported incidence was 2.49 newborns with clefts per 1,000 live births[6]. The etiology of oral clefts is multifactorial in nature with genetic and environment factors contributing to its presence[7].

Maintaining an optimal oral health in cleft patients may be difficult due to the anatomy of cleft area, misaligned teeth, hypoplastic defect and scarring. Most CLP Infants are bound to have surgery during infancy or early childhood period[8]. It has often been speculated that the irregularity of the teeth, oral soft tissue defects, and unpredictable dental, skeletal and soft tissue development related to surgical repair could result in a higher frequency of caries and poor oral hygiene in CLP patients than in normal persons. Numerous studies have investigated this issue and showed contradictory findings. Many studies concluded that patients with oral clefts have a higher caries prevalence compared with patients with no oral clefts[9-13]. However, other studies revealed no

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significant differences in caries experience between the CLP and control group[14-17].

Children with CLP experience a significant number of psychosocial risks, including multiple medical appointments and evaluations, repeated surgeries, feeding difficulties, differences in appearance resulting in possible stigmatization, and the possible need for early special treatment such as speech therapy. For the individuals with CLP, differences in appearance often involve varying degrees of facial scarring, dental and orthognatic features, such as missing teeth, and speech and language limitation[18]. Several studies have described the psychological and social burdens related to children with clefts, and stated that CLP patients had significantly greater behavior problems, more symptoms of depression and were less happy with their facial appearance than the non CLP control group. In addition, CLP patients had more psychological distress and lower quality of life than control subjects[19-21]. However, other studies concluded that patients with CLP did not exhibit more psychosocial problem or reported better social experience and quality of life than did the control group[22,23]. There are conflicting evidence whether children and adults with CLP experience increased psychological problems and poor quality of life due to their cleft condition[24,25]. Moreover, the new concept of health suggests us to measure the oral health of individuals in relation to general health and psychosocial well-being. Numerous socio-dental or oral health-related quality of life (OHRQoL) indices have been developed to measure oral well-being and to assess oral impacts on their daily life[26].

Limited data is currently available on the prevalence of oral diseases and oral health related quality of life among early-adolescents with CLP in Thailand. Hence, the aims of this study were to determine the levels of dental caries, periodontal disease and oral health-related quality of life in subjects with CLP as compared with non-cleft controls.

Material and Method

This cross-sectional study was conducted among early adolescents aged 10-14 years. Subjects included 68 oral cleft patients attending the Center for Cleft Lip-Palate and Craniofacial Anomalies at Khon Kaen University (Tawanchai Project) in Khon Kaen, Thailand. Patients with other concomitant congenital malformation, systemic disease, mental retardation and/ or recognized syndromes were excluded from this study. One-hundred-and-eighteen non-cleft controls were selected by simple random sampling from two schools

in surrounding areas. Subjects were interviewed to determine oral health-related quality of life by 2 trained dental students. Other information was obtained by interview and medical record retrieval. Parents of the subjects were also interviewed about their child's oral health behaviors and history of dental treatment. The children with cleft were categorized into 3 subgroups using Kernahan and Stark Cleft Lip & Cleft Palate Classification[27].

Oral examinations

One calibrated dentist performed oral examinations in dental clinic of the Faculty of Dentistry at Khon Kaen University to evaluate dental caries, gingivitis and plaque deposits. Caries was assessed using the decayed, missing and filled tooth index in primary teeth (dmft) and permanent teeth (DMFT) in accordance with WHO diagnostic criteria[28]. Gingival index (GI) and plaque index (PI) were used to assess gingivitis and oral hygiene status, respectively. GI was coded as follows: 1 = normal, 2 = mild inflammation, 3 = moderate inflammation and 4 = severe inflammation. PI codes included: 1 = no plaque, 2 = film or plaque, 3 = moderate accumulation, 4 = abundant accumulation[29].

Measurement of oral health related quality of life

Oral health related quality of life was measured using the Child-Oral Impacts on Daily Performance Index (Child-OIDP), which has previously been validated in a Thai population[30]. Initially, the subjects were presented with a list of impairments, including toothache, sensitive teeth, tooth decay (hole in teeth), exfoliating primary teeth, tooth space (due to a non-erupted permanent tooth), fractured permanent tooth, color of tooth, shape or size of tooth, position of tooth, bleeding gum, swollen gum, calculus, oral ulcers, bad breath, deformity of mouth or face, erupting permanent tooth and missing permanent tooth. From the list, subjects were asked to identify oral problems that they perceived in the last 3 months. The eight-item Child-OIDP index measured difficulty carrying out the eight daily life activities during the past three months; these included problems due to the condition of one's mouth in areas of a) eating, b) speaking and pronouncing clearly, c) cleaning teeth, d) sleeping and relaxing, e) smiling without embarrassment, f) maintaining one's emotional state, g) studying, including going to school and doing homework, and h) enjoying contact with other people and carrying out major school work. The interviews were aided by 16 pictures (negative and positive picture for each performance). The subjects

were asked about the frequency and severity of each of Child-OIDP items on a 3-point Likert score (1-3) as follows: frequency score (1) being once or twice a month (2) three or more times a month (3) three or more times a week. Severity scores; 1 = little effect, 2 = moderate effect, 3 = severe effect. Thereafter the subjects were asked to identify the oral condition that caused the specific impacts. The oral impact score of each performance was obtained by multiplying severity and frequency scores, therefore the scores can range from 0 to 9 per each performance. The overall impact score was the sum of all 8 performances (ranging from 0-72) divided by 72 and multiplied by 100.

The data were analyzed using SPSS version 17.0 for Windows (SPSS Inc., Chicago, IL, USA). Mann Whitney U test was used to compare the differences in oral health indices, overall impact scores and impact scores on each of the 8 performances. Differences between cleft types were measured using Kruskal Wallis test. Chi-square test was performed to compare the overall prevalence of impact and prevalence on each of 8 performances. The significance level was 5%.

Results

The children in cleft group consisted of 34 males (50%) and 34 females (50%) with a mean age of 11.8 years, while the control group consisted of 48 males (40.7%) and 70 females (59.3%) with a mean age of 11.9 years. Children in cleft group were similar to the non-cleft group in age, parent education, family income and

Table 1. Socio-demographic characteristics and oral behaviors of the cleft children and control children

Characteristic	Cleft children (n = 68)		Control children (n = 118)	
	n	%	n	%
Age (mean ± SD)	11.8±1.37		11.9±1.31	
Gender				
Male	34	50.0	48	40.7
Female	34	50.0	70	59.3
Monthly family income (baht)				
3,000-5,000	35	54.7	48	42.5
5,001-10,000	15	23.4	44	38.9
More than 10,000	14	21.9	21	18.6
Father's education				
Elementary school	38	55.9	51	46.4
High school	20	29.4	48	43.6
Bachelor's degree and higher	10	14.7	11	10.0
Mother's education				
Elementary school	42	63.4	61	55.5
High school	16	24.3	41	37.2
Bachelor's degree or higher	8	12.3	8	7.3
Health insurance				
National health insurance	55	82.1	93	80.9
Work-related insurance	12	17.9	22	19.1
Cleaning method				
Brushing only	58	85.3	93	78.8
Brushing plus other methods	10	14.7	25	21.2
Daily tooth brushing ≥2 times/day				
Yes	41	60.3	81	68.6
No	27	39.7	37	31.4
Frequency of sweetened snack consumption (times/day) (mean ± SD)				
Whole day	2.22±1.29		2.41±1.01	
During meal	1.02±0.89		1.24±0.80	
Between meal	1.19±0.91		1.16±0.74	
Number of sugar-sweetened snack (items/day) (mean ± SD)	3.24±2.15		4.16±1.87	

oral behaviors, as illustrated in Table 1.

Caries experience and periodontal status

The comparison groups were significantly different in regard to caries prevalence and experience in permanent teeth. The prevalence of dental caries was higher in the cleft affected children (48.5%) than the control group (20.3%, $p<0.01$). The cleft group also had more decayed, missing and filled teeth than did the controls (mean DMFT: 0.82 ± 1.23 versus 0.38 ± 0.93, respectively; $p<0.01$). On the contrary, there was no significant difference in the prevalence of dental caries and the mean dmft in deciduous teeth between the two groups. For gingival and oral hygiene status, the cleft subjects appeared to have a significantly higher mean score for both GI and PI indices as compared with the controls (Table 2).

Table 3 shows the oral health status of the cleft children by cleft type. There was a significant difference in DMFT among individuals with different types of clefts. The DMFT scores of those with CL or CP only (0.08 ± 0.29) were lower than that of the unilateral cleft lip and palate (UCLP) (0.97 ± 1.46) and bilateral cleft lip and palate (BCLP) groups (1.00 ± 0.97) ($p<0.01$). However, there were no statistical significant differences in dmft, PI and GI scores according to cleft types.

Oral Impacts on Quality of Life: Prevalence, Impact scores and cause of impacts

The prevalence of impacts in both groups were high; 85.3% of cleft children and 86.4% of control

Table 2. Comparison of dental caries experience and periodontal status of the cleft children and control children

	Cleft children (n = 68)	Control children (n = 118)	*p*-value
Number of teeth			
Deciduous teeth	1.25 ± 2.26	1.94 ± 2.78	0.12
Permanent teeth	15.75 ± 2.26	15.05 ± 2.80	0.24
Prevalence of caries (%)			
Deciduous teeth	69.20	86.80	0.07
Permanent teeth	48.50	20.30	<0.01*
dmft	0.66 ± 1.38	1.05 ± 1.72	0.08
DMFT	0.82 ± 1.23	0.38 ± 0.93	<0.01*
Plaque index	0.99 ± 0.47	0.85 ± 0.55	0.02*
Gingival index	0.55 ± 0.26	0.43 ± 0.32	<0.01*

* Statistically significant at *p*-value <0.05. Differences tested using Mann Whitney U test for continuous data and using Chi-square test for categories data. dmft = the decayed, missing and filled tooth index in primary teeth; DMFT = the decayed, missing and filled tooth index in permanent teeth

Table 3. Dental caries experience and periodontal status of the cleft children by cleft type

	Cleft type			
	CL or CP only (n = 12)	UCLP (n = 36)	BCLP (n = 20)	*p*-value
dmft	0.58 ± 1.16	0.36 ± 0.96	1.25 ± 1.91	0.14
DMFT	0.08 ± 0.29	0.97 ± 1.46	1.00 ± 0.97	<0.01*
Plaque Index	0.85 ± 0.31	0.98 ± 0.53	1.10 ± 0.41	0.30
Gingival Index	0.50 ± 0.26	0.54 ± 0.29	0.60 ± 0.17	0.47

CL or CP = cleft lip or cleft palate only; UCLP = unilateral cleft lip and palate; BCLP = bilateral cleft lip and palate; dmft = the decayed, missing and filled tooth index in primary teeth; DMFT = the decayed, missing and filled tooth index in permanent teeth. * Kruskal Wallis's test (pairwise comparison by Mann-Whitney U test and adjusted p-value by Bonferroni method). + = statistically significant at *p*-value = 0.02, ++ = statistically significant at *p*-value = 0.006

children had experienced some kind of oral impact on their daily life during the past three months. Impact on Speaking (61.8%), Eating (39.7%) and Smiling (36.8%) were relatively high in children with cleft. A significant difference was found in the prevalence of impact on Speaking and Smiling between the two groups. Compared with the controls, the cleft children had more prevalence of impact on Speaking (3.4% versus 61.8%, respectively) and Smiling (22.9% versus 36.8%, respectively). However, the control children had more prevalence of impact than the cleft children on Eating and Relaxing performances (Table 4).

Among children with impact, the mean overall impact score of cleft children was 11.9±10.0, with the mean impact score for Speaking (4.5±1.9), Emotion (4.2±3.2) and Eating (3.4±2.2) being the highest. There was a significant difference between cleft and control children in the mean overall impact score ($p = 0.01$). The children affected with cleft had higher impact scores than control subjects on Speaking (4.5±1.9 versus 1.5±1.0; $p<0.01$) and Relaxing (3.4±1.4 versus 2.2±1.9; $p = 0.01$) (Table 5).

Fig. 1 shows the main perceived causes of impacts on each of the eight performances. For cleft children, the conditions contributed to the impacts on Speaking included oro-nasal fistula (40.5%), use of orthodontic appliances (23.8%) and deformity of mouth or face (16.7%). The majority of impacts on Emotion were caused by toothache (28.6%) and deformity of mouth or face (28.6%). The majority of impacts on

**Table 4.** Prevalence of Impacts of cleft children and control children

Daily performances	Cleft children (n = 68)		Control children (n = 118)		p-value
	n	%	n	%	
Impacted >1 performances	58	85.3	102	86.4	0.82
Eating	27	39.7	76	64.4	<0.01*
Speaking	42	61.8	4	3.4	<0.01*
Cleaning teeth	19	27.9	46	39.0	0.12
Relaxing	7	10.3	31	26.3	<0.01*
Emotion	9	13.2	20	16.9	0.50
Smiling	25	36.8	27	22.9	0.04*
Study	4	5.9	9	7.6	0.77
Contact	3	4.4	7	5.9	0.74

* statistically significant at *p*-value <0.05

Table 5. Impact scores (mean ± SD) of oral impacts in daily performances in the cleft children and control children

Daily performances	All children			Children with impacts only		
	Cleft children (n = 68)	Control children (n = 118)	p-value	Cleft children (n = 58)	Control children (n = 102)	p-value
Overall impact	10.1±10.1	7.5±7.7	0.06	11.9±10.0	8.6±7.7	0.01*
Eating	1.4±2.2	2.2±2.2	<0.01*	3.4±2.2	3.4±1.8	0.85
Speaking	2.8±2.7	0.1±0.3	<0.01*	4.5±1.9	1.5±1.0	<0.01*
Cleaning teeth	0.8±1.8	1.0±1.6	0.17	3.0±2.3	2.5±1.6	0.55
Relaxing	0.3±1.1	0.6±1.4	0.02*	3.4±1.4	2.2±1.9	0.01*
Emotion	0.5±1.7	0.5±1.4	0.36	4.2±3.2	3.2±1.6	0.58
Smiling	1.2±2.1	0.7±1. 6	0.02*	3.4±2.1	2.9±2.1	0.30
Study	0.1±0.5	0.2±0.8	0.60	1.7±1.0	2.8±0.8	0.09
Contact	0.1±0.6	0.2±0.7	0.66	2.7±1.5	2.7±1.7	0.90

* statistically significant at *p*-value <0.05
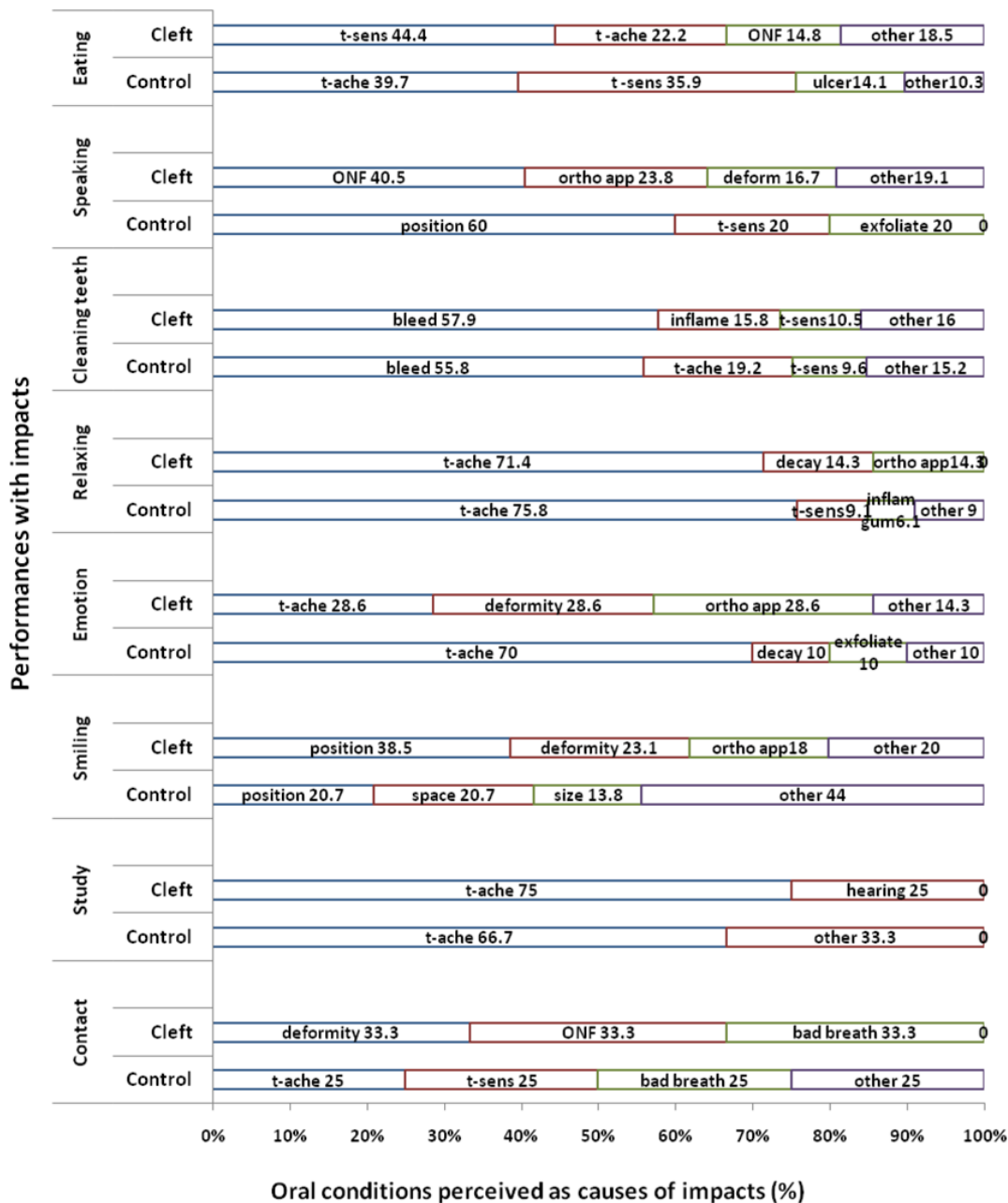
Toothache (t-ache), Sensitive tooth (t-sens), Tooth decay (decay), Having Oro-Nasal Fistula (ONF), Having orthodontic appliance (ortho app.), Position of teeth (position), Exfoliating of primary teeth (exfoliate), Bleeding gum (bleed), Inflamed gum (inflame), Deformity of mouth or face (deformity), Tooth space due to un erupted permanent teeth (space), Abnormal shape or size of tooth (size), Hearing problem (hearing).

Fig. 1   Main oral condition causing impacts on each of the eight performances.

Eating were attributed to sensitive tooth (44.4%), toothache (22.2%) and having orthodontic appliance (14.8%). The perceived causes of impacts were different among the control subjects. Toothache was the most frequently reported cause of almost all impacts, which attributed to 70% of impacts on Emotion. The majority of impacts on Eating were caused by toothache (39.7%) and sensitive tooth (35.9%), while the impacts on Smiling were caused by position of teeth (20.7%) and tooth space (20.7%).

Discussion

To our knowledge, this was the first study to determine the levels of dental caries and periodontal disease in adolescents with CLP in Thailand. Assessment of oral health status is essential for the planning of appropriate preventive and restorative care to maintain optimal oral health of individuals with CLP. Our results showed that the prevalence and extent of dental caries in permanent teeth were significantly higher in cleft children than in non-cleft children. These were in agreement with several studies from Germany, England, Jordan and China[9-12]. Possible explanations for the higher dental caries in cleft patients may include anatomy of cleft area, misaligned teeth and discrepancy in skeletal base relationship. In addition, development related to surgical repair, surgical bone grafting procedure, hypoplastic defect and scarring, combined with several phases of orthodontics treatment may restrict access to proper oral hygiene and predispose the individuals to plaque accumulation[8,31]. Inconsistent results were reported in other studies which found no significant difference in caries experience in permanent teeth between cleft patients and controls However, these studies were conducted in subjects with a wide age range (18 months-21 years)[14-16].

A search of the literature revealed conflicting results regarding dental caries in primary teeth. Some studies reported that patients with CLP had higher caries experience than did the controls[9,10,13,15], while others[12,14,32] found no difference in the prevalence of dental caries and the mean dmft score. The present study observed no difference between the comparison groups. This was mainly due to the fact that our subjects were early adolescents (10-14 years), who had limited number of primary teeth.

When compared among children with different types of clefts, this study showed that children with UCLP and BCLP had a higher number of permanent teeth with caries than those with CL or CP only. Nonetheless, a study in Vietnamese subjects reported that children with UCLP or BCLP had significantly higher caries than did the controls in the primary teeth[33]. Two UK studies did not find a significant effect of cleft type on the child's predisposition to dental caries in permanent dentition. However, these studies were conducted among subjects in different age group (3-18 years[34] and 4-12 years[35]). A limitation of our study was a small number of subjects in each cleft subgroup. Further study is suggested to provide more insight into the influence of cleft type on dental caries.

Regarding periodontal and oral hygiene status, this study also showed significantly higher mean GI and PI scores in patients with CLP compared with the controls. These findings were in concordance with several other studies[10,11,13,17]. Only one study by Lucus and colleagues in England reported null results[14], which could be due to a small sample size (n = 60) and wide age range of subjects (3-15 years). A split mouth study of periodontal parameters in complete UCLP children in Southern Vietnam also concluded that periodontal probing depth, attachment loss and alveolar bone loss were more severe in cleft site than in non-cleft region[36]. The presence of scar tissue and the consequences of surgical repair of CLP may lead to difficulties of plaque control and maintenance of oral hygiene. Therefore, it is essential to integrate the oral hygiene and dental preventive program into the treatment protocol of the cleft children in order to establish desirable oral habits and oral health.

Craniofacial anomalies, such as CLP, may have an impact on the individual's quality of life from birth until adulthood. We evaluated quality of life using OIDP index, which measures the ultimate oral impact that seriously affects a person's performance in daily life and identifies specific causes of impact that contribute to the problem. The prevalence of oral impacts experienced during the past three months in both cleft and control children in this study were high (85.3% and 86.4%, respectively). A previous study of 12-year-old Thai primary school children also found a similar prevalence (89.8%)[30]. As expected, the cleft children had a higher prevalence of oral impact on Speaking (61.8% versus 3.4%) and Smiling (36.8% versus 22.9%), compared with the controls. When considered the impact scores, we observed that the cleft children had a higher overall impact score compared to the controls. The high score indicates how much trouble the event described by the item caused to their daily living, so our study showed that the CLP children had lower quality of life than the controls. This finding was similar to previous studies of OHRQoL among cleft patients using various instruments which demonstrated that the prevalence, extent and severity of OHRQoL were all higher among the cleft samples when compared with controls, which indicated that CLP patients had lower quality of life than patients with no cleft[19,20]. Results of current study also confirmed a study in Ohio, USA, which concluded that the children with orofacial cleft had significantly lower quality of life than control children for the Functional Well-being and Social-Emotional Well-being subscale[21].

Among Cleft children, the mean impact scores for Speaking, Emotion control, Eating and Relaxing were highest (4.5, 4.2, 3.4 and 3.4, respectively). The main perceived causes of difficulty in daily performances of cleft patients included having oro-nasal fistula, having orthodontic appliance, position of teeth and deformity of mouth or face, which exerted an impact on the performances relating to physical and psychosocial dimension. This study found that Speaking was the most important aspect of OHRQoL of cleft children. Difficulty with speaking due to oral condition was the most common impact (61.8%) and the impact score related to the difficulty with speaking was highest (4.5±1.9). The main perceived cause of difficulty in speaking were having oro-nasal fistula (40.5%), having orthodontic appliances (23.8%) and deformity of mouth or face (16.7%). Incomplete closure of the pharynx during phonation can lead to nasal speech, which can be as disturbing for patients as deficits in facial aesthetics and can lead to a psychological burden and social exclusion[37]. The problems of individuals with cleft are unique, thus it is important to understand specific problem and identify ways to improve the quality of life for these patients.

Conclusion

The cleft children generally display higher levels of dental caries and gingivitis, and have poorer oral hygiene compared to the controls. They also had lower oral health-related quality of life than the controls. It is thus essential to integrate an oral preventive program and develop effective oral and general health promotion strategies to improve the quality of life in cleft patients.

Acknowledgement

Potential conflicts of interest

None.

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สภาวะทันตสุขภาพและผลกระทบของสุขภาพช่องปากต่อคุณภาพชีวิตของผู้ป่วยเด็กช่วงก่อนวัยรุ่นที่เป็นปากแหว่งเพดานโหว่

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วัตถุประสงค์: เพื่อประเมินโรคฟันผุ โรคของอวัยวะปริทันต์และผลกระทบของสุขภาพช่องปากต่อคุณภาพชีวิตในกลุ่มเด็กปากแหว่งเพดานโหว่ เปรียบเทียบกับเด็กทั่วไป

วัสดุและวิธีการ: การศึกษานี้เป็นการศึกษาแบบตัดขวางในจังหวัดขอนแก่น ประเทศไทย กลุ่มเด็กอายุ 10-14 ปี โดยศึกษาผู้ป่วยปากแหว่งเพดานโหว่ 68 ราย และเด็กทั่วไป 118 ราย ทำการตรวจโรคฟันผุ ภาวะเหงือกอักเสบและการมีคราบจุลินทรีย์ และสัมภาษณ์เพื่อวัดผลกระทบของสุขภาพช่องปากต่อคุณภาพชีวิตโดยใช้ดัชนี Child-OIDP

ผลการศึกษา: ผลการศึกษาพบว่าเด็กปากแหว่งเพดานโหว่มีค่าเฉลี่ยฟันแท้ผุ ถอน อุด ค่าเฉลี่ยคราบจุลินทรีย์และค่าเฉลี่ยเหงือกอักเสบสูงกว่าเด็กทั่วไป อย่างมีนัยสำคัญทางสถิติ ส่วนค่าเฉลี่ยฟันน้ำนมผุ ถอน อุด ไม่แตกต่างกัน การวัดผลกระทบของช่องปากต่อคุณภาพชีวิตพบว่า ความชุกของผลกระทบ ต่อการพูดและออกเสียงและการยิ้มให้เห็นฟันโดยไม่รู้สึกอายในเด็กปากแหว่งเพดานโหว่สูงกว่าเด็กทั่วไปอย่างมีนัยสำคัญทางสถิติ คะแนนผลกระทบเฉลี่ยของเด็กทั้งสองกลุ่มไม่แตกต่างกัน แต่ในกลุ่มเด็กปากแหว่งเพดานโหว่ที่มีผลกระทบมีคะแนนผลกระทบเฉลี่ย (11.9) สูงกว่าเด็กทั่วไป (8.6) อย่างมีนัยสำคัญทางสถิติ เด็กปากแหว่งเพดานโหว่มีคะแนนผลกระทบเฉลี่ยสูงในกิจกรรมการพูดและออกเสียง (4.5) การรักษาอารมณ์ตามปกติ (4.2) การกินอาหาร (3.4) และการพักผ่อนและนอนหลับ (3.4) โดยสาเหตุของผลกระทบเหล่านี้ คือ การมีช่องโหว่ที่เพดาน การใส่เครื่องมือจัดฟัน ตำแหน่งของฟันของฟันผิดปกติและการมีความผิดปกติของปากหรือใบหน้า

สรุป: การศึกษานี้แสดงให้เห็นว่า เด็กปากแหว่งเพดานโหว่มีสภาวะสุขภาพช่องปากและอนามัยช่องปากแย่กว่าเด็กทั่วไป และมีคุณภาพชีวิตต่ำกว่าเด็กทั่วไป ในกิจกรรมและสาเหตุที่จำเพาะแตกต่างจากเด็กทั่วไป