นิพนธ์ต้นฉบับ • Original Article

สภาวะสุขภาพช่องปากและความจำเป็นที่จะต้องได้รับการรักษาทางทันตกรรมของเด็กพิการ ในโรงเรียนฟื้นฟูเด็กพิการ จังหวัดขอนแก่น ประเทศไทย†

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Oral Health Status and Treatment Need of Disabled Children in Rehabilitation School in Khon Kaen,Thailand†

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หลักการและเหตุผล: สภาวะสุขภาพในช่องปากได้แก่โรคฟันผุ โรคปริทันต์ และการสบฟันผิดปกติ เป็นปัญหาทางสาธารณสุขของเด็กในประเทศไทย เด็กพิการมีความสามารถในการดูแลสุขภาพช่องปากของตนเองน้อยกว่าเด็กทั่วไป และขาดโอกาสในการได้รับการดูแลจากบุคลากรทางสาธารณสุขและจากการรณรงค์ทางด้านสุขภาพช่องปาก การศึกษานี้ศึกษาสภาวะสุขภาพช่องปากและความจำเป็นที่จะต้องได้รับการรักษาทางทันตกรรมของเด็กพิการโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์ จังหวัดขอนแก่น ประเทศไทย

วัตถุประสงค์: เพื่อศึกษาสภาวะสุขภาพช่องปากและความจำเป็นที่จะต้องได้รับการรักษาทางทันตกรรมของเด็กพิการโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์ จังหวัดขอนแก่น ประเทศไทย

รูปแบบการศึกษา: เป็นการศึกษาเชิงพรรณนา (Descriptive study)

ประชากรศึกษา: เด็กพิการในโรงเรียนทั้งสองแห่ง

สถานที่ศึกษา: โรงเรียนนักบุญเยราร์ด อำเภอเมืองและโรงเรียนศึกษาสงเคราะห์ อำเภอบ้านแฮด จังหวัดขอนแก่น ประเทศไทย

Background: Dental caries, periodontal disease and malocclusion are common among Thai children. Disabled children are thought less capable of taking care of themselves but are often missed by oral health campaigns. We surveyed the oral health and treatment needs of disabled children at St. Gerard's Children's Rehabilitation Center and Suksasongkrao School in Khon Kaen Thailand.

Objective: To study oral health status and treatment need in the disabled children at St. Gerard's Children's Rehabilitation Center and Suksasongkrao School in Khon Kaen province.

Design: Descriptive study.

Setting: St. Gerard's Children's Rehabilitation Center in Central District and Suksasongkrao School in Banhaed District Khon Kaen Thailand.

Population: Disabled children at both schools.

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วิธีการศึกษา: ศึกษาเด็กพิการจำนวน 95 คน เป็นเด็กพิการในโรงเรียนนักบุญเยราร์ด 40 คน และโรงเรียนศึกษาสงเคราะห์ 55 คน ตั้งแต่เดือน ธันวาคม พ.ศ. 2542 ถึงเดือน พฤศจิกายน พ.ศ. 2543 โดยศึกษาข้อมูลจากแฟ้มประวัติของเด็กพิการ การสัมภาษณ์ครูและผู้ดูแลเด็ก การสังเกตวิธีการดูแลสุขภาพช่องปาก การตรวจและบันทึกสุขภาพช่องปาก และความจำเป็นที่จะต้องได้รับการรักษาทางทันตกรรมของเด็กพิการทุกคน

ผลการศึกษา: ความชุกของโรคฟันผุของเด็กพิการในโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์ เท่ากับร้อยละ 80 และร้อยละ 67 ตามลำดับ ค่าเฉลี่ยฟันผุ ถอน อุด ของฟันน้ำนม (dmft) ของเด็กพิการทั้งสองโรงเรียนเท่ากับ 1.9 $\pm$ 3.4 ซี่ต่อคน และของฟันแท้ (DMFT) เท่ากับ 2.0 $\pm$ 3.3 ซี่ต่อคน เด็กพิการในโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์ มีความจำเป็นที่จะต้องได้รับการรักษาโดยการอุดฟัน 1 ด้าน ร้อยละ 63 และร้อยละ 56 ตามลำดับ และได้รับการรักษาโดยการถอนฟันร้อยละ 43 และร้อยละ 24 ตามลำดับ เด็กพิการในโรงเรียนนักบุญเยราร์ดมีภาวะเหงือกอักเสบร้อยละ 40 (ค่าเฉลี่ย = 1.3 $\pm$ 3.2 sextant/คน) ส่วนโรงเรียน ศึกษาสงเคราะห์มีภาวะเหงือกอักเสบร้อยละ 55 (ค่าเฉลี่ย = 2.6 $\pm$ 2.7 sextant/คน) เด็กพิการในโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์มีภาวะเคลือบฟันผิดปกติร้อยละ 18 และร้อยละ 9 ตามลำดับ เด็กพิการในโรงเรียนนักบุญเยราร์ดและโรงเรียนศึกษาสงเคราะห์มีภาวะการสบฟันผิดปกติ (malocclusion) ร้อยละ 48 และ 67 ตามลำดับ

สรุป: การรณรงค์การส่งเสริม ป้องกันและรักษาสุขภาพช่องปากของเด็กพิการ เป็นสิ่งจำเป็นสำหรับเด็กพิการทั้งที่อยู่ในเมืองและในชนบท

Intervention: Between December 1999 and November 2000, we assessed 95 disabled children; 40 from St. Gerard's and 55 from Suksasongkrao. St. Gerard's is in the Central District and Suksasongkrao School in Banhaed District, Khon Kaen province Northeast Thailand. Data on the children came from institutional records and questionnaires completed during interviews with teachers and care-givers and each child was examined for their oral health status with intention to treat.

Results: The prevalence of dental caries at St. Gerard's and Suksasongkrao was 80 and 67 percent, respectively. Decayed ,missing and filling of deciduous teeth (dmft) at both schools averaged 1.9 $\pm$ 3.4 teeth/person, while decayed ,missing and filling of permanent teeth (DMFT) averaged 2.0 $\pm$ 3.3. Sixty three and 56 percent of the children at St. Gerard's and Suksasongkrao needed fillings on one side, 43 and 24 percent dental extraction, respectively. Forty percent of the children at St. Gerard's had gingivitis (1.3 $\pm$ 3.2 sextant/person) *vs.*. 55 percent at Suksasongkrao (2.6 $\pm$ 2.7 sextant/person). The children at St. Gerard's and Suksasongkrao had enamel defects 18 and 9 percent respectively. Malocclusions at St. Gerard's *vs.* Suksasongkrao reached 48 *vs.* 67 percent, respectively.

Conclusion: A campaign to promote the dental and oral health among urban and rural disabled children is needed.

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Introduction

Oral health problems among Thai children are common but perhaps more so among those less capable of taking care of themselves viz. the disabled or handicapped. The 1996 national census revealed that 1 million (1.7% of) Thais are handicapped: 18.2% of these are under 19 years old and 15.6 percent are mentally handicapped children.[1] The Ministry of Public Health established a preventive dentistry program in 1977,[2] which targets children in primary school. However, handicapped children are commonly segregated out of the regular school system so are missed during oral health prevention campaigns, so lack proper treatment and are at risk of oral morbidity.[3]

Beck and Hunt found that the more severe the disability the more prevalent were diseases of the oral cavity.[4] Nunn and Murray observed poorer oral health, more dental caries and malocclusions in handicapped children.[5] Evans found that the incidence of dental caries in pre-school-aged handicapped children was higher than it was in normal children. The mobile dental care in the community could reduce the incidence of dental caries.[6]

By contrast, in a 1984 survey of 350 mentally handicapped children at Cambridge Hospital, the occurrence of dental caries was not disproportionate compared with normal children but malocclusions were.[7] Similarly, Schwarz and Viqilid reported the incidence of dental caries in mentally handicapped children was less

than in non-handicapped children and concluded this was because their consumption of problem food types was more strictly regulated.[8] In 1984, Nunn reported that the incidence of dental caries in Down's syndrome was lower than in normal children because they had a different saliva buffer perhaps because in foster care the consumption of sweets was limited.[9]

Pope and Curzon reported that the incidence of gingivitis increased in mentally handicapped children as they aged.[10] Johnson and Young found the incidence of periodontal disease in Down's syndrome was higher than in normal children. They had poor oral health, bone loss, gingivitis, calculus and teeth loss more than normal children.[11] Mclver and Marchen observed that children with Down's syndrome had high arch palate and deformities of the oral cavity; angle's class III and posterior cross bites.[12] Vigilid found that The socioeconomic status of the Down's syndrome's family and better oral health status were significantly correlated .[13]

Oral health prevention and promotion are important policies. Fenton and Prosser found that such programs stimulate health personnel to take better care of handicapped children.[14-15] Published reports of the oral health and treatment needs of handicapped children in Thailand are few. Our aim was to assess the oral health (i.e. dental caries, periodontal disease, occlusion, enamel defect, cleft lip and/or palate) and treatment needs of disabled children at St. Gerard's Children's Rehabilitation Center and Suksasongkrao School, Khon Kaen province, Northeast Thailand.

Methods

A descriptive study was conducted between December 1999 and November 2000 at St. Gerard's in the central district, and Suksasongkrao in Banhaed District, Khon Kaen, Northeast Thailand. We included 95 disabled children; 40 from St. Gerard's and 55 from Suksasongkrao.

The data collected came from the children's records and questionnaires completed during interviews with the teachers and care-givers. We examined the oral health of each child with intention to treat. The examiners included three dentists who calibrated the standard of examining using a kappa analysis (k = 0.80). The dentists repeated 10% of the examinations.

The oral health status and treatment needs were recorded using the DMFT index, CPI (Community periodontal Index), occlusion index (malocclusion), enamel defect index, cleft lip and palate index. Descriptive statistics (i.e. frequency, percent, mean and standard deviation performed on SPSS for Windows) were used to analyze the data. The relevance of the data reached a k of 0.76. Ten of the questionnaires for teachers and care-givers were tested before conducting the interview at St. Gerard's; the resulting Spearman reliability correlation was 0.8.

This study was approved by ethics committee of Khon Kaen University with the principles of Helsinki's Declaration.

Results

We studied 95 disabled children, 40 from St. Gerard' s and 55 from Suksasongkrao. Disabled children at St. Gerard's averaged 11.9 $\pm$ 5.8 years of age (range, 4-29); 26 (65%) males and 14 (35 %) females. The children at Suksasongkrao averaged 12.8 $\pm$ 2.6 years of age (range, 8-19) ; 26 males (47.3%) and 29 female (52.7%).

Mental retardation (24, 60%), convulsive disorders (7, 17.5%) and Down's syndrome (4, 10%) affected most of the children at St. Gerard's vs. mental retardation (40, 72.7%), epilepsy (5, 9.1%), Down's syndrome (6, 10.9%) at Suksasongkrao. Encephalitis, cerebral palsy, autism, congenital heart disease, asthma and attention deficit hyperactive disorder occurred in a number of patients (Table 1).

St. Gerard's had oral health promotion activities, though not in all classes; nevertheless, most (26, 65%) of the children were able to brush their teeth. By contrast, Suksasongkrao provided oral health promotion activities for all classes (Table 1).

The prevalence of dental caries at St. Gerard's vs. Suksasongkrao was 80 vs. 67.2 percent, respectively. St. Gerard's had a mean DMFT index of deciduous teeth (dmft) of 2.2 $\pm$ 3.2 teeth/person while the index for permanent teeth (DMFT) was 2.7 $\pm$ 4.4 teeth/person. By comparison, Suksasongkrao had a mean dmft vs. DMFT of 1.7$\pm$3.4 vs. 1.5 $\pm$ 2.1 teeth/person.

The distribution by age is presented in Table 2. The dmft at both schools declined with age and DMFT increased with age.

Table 1. Characteristic of disabled children distributed by school

Characteristic	School	
	St. Gerard's Number (%)	Suksasongkrao Number (%)
Disability and disease		
Mental retardation	24 (60.0)	40 (72.8)
Convulsive disorder	7 (17.5)	5 (9.1)
Down's syndrome	4 (10.0)	6 (10.9)
Encephalitis	1 (2.5)	1 (1.8)
Cerebral palsy	2 (5.0)	0 (0)
Asthma	0 (0)	2 (3.6)
Autism	1 (2.5)	0 (0)
Attention deficit hyperactive disorder	0 (0)	1 (1.8)
Congenital heart disease	1 (2.5)	0 (0)
Ability to brush their own teeth		
Yes	26 (65)	55 (100)
No	14 (35)	0 (0)
Oral health promotion activity		
Oral health examination	Present, but not for all classes	Present
Referrals for proper treatment		
Brushing after lunch		
Oral health education		

The periodontal status of the children at St. Gerard's and Suksasongkrao was not good. Bleeding gums was most common at both schools followed by calculus, calculus with bleeding and periodontal pockets (Table 3).

A majority (62.5%) of children at St. Gerard's required fillings on one side, 22.5% on two sides, 5 cases (12.5%) on more than two sides; 9 (22.5%) needed root canal treatment and 17 (42.5%) extraction. At Suksasongkrao, 56.4% needed fillings on one side, 3.6% fillings on two sides, 3.6% fillings on more than two sides and 23.6% needed an extraction (Table 4).

Seven children at St. Gerard's had enamel defects, while at Suksasongkrao there were 5. Only 1 handicapped child (25%) in St. Gerard's had cleft lip/palate, and none at Suksasongkrao. Nearly half the children at St. Gerard's had malocclusion, while two-thirds did at Suksasongkrao (Table 5).

Discussion

St. Gerard's is a private school for the disabled and the children come in the morning and return home in the evening. Suksasongkrao is a government service provider and its clients reside at the school. Mental retardation, convulsive disorder, Down's syndrome, encephalitis, cerebral palsy, autism, congenital heart disease and attention deficit hyperactive disorder represent the range of disabilities encountered. Compared to non-disabled children, the children in the centers had poorer oral health, suggesting the segregated environment and their own disabilities were contributing factors.

St. Gerard's had a higher prevalence of dental caries than Suksasongkrao perhaps because Suksasongkrao had oral health promotion activities in all classes. The children at Suksasongkrao also had less opportunity to eat sweets and snacks between meals than was observed at

Table 2. Dental caries status by school, type of tooth and age group

Dental caries status	School	
	St.Gerard's (40 children)	Suksasongkrao (55 children)
Prevalence of dental caries number (%)		
Present	32 (80.0)	37 (67.2)
Not present	8 (20.0)	18 (32.8)
Dmft Index (mean ± sd) teeth/person		
Deciduous teeth		
Mean of decay, missing, filling index (dmft)	2.2 ± 3.2	17 ± 3.4
Mean of decay (d)	2.0 ± 3.2	1.2 ± 3.0
Mean of missing (m)	0	0.5 ± 1.2
Mean of filling (f)	0.2 ± 0.3	0
Permanent teeth		
Mean of decay, missing, filling index (DMFT)	2.7 ± 4.4	1.5 ± 2.1
Mean of decay (D)	2.3 ± 3.4	1.3 ± 1.8
Mean of missing (M)	0.2 ± 1.2	0.2 ± 0.5
Mean of filling (F)	0.1 ± 0.6	0
DMFT Index distributed by age (mean ± sd) teeth/person		
Deciduous teeth (dmft)		
0-6 yr.	6.3 ± 5.2	0
7-12 yr.	2.3 ± 2.4	3.9 ± 4.6
13-18 yr.	0	± 0.4
>18 yr.	0.2 ± 0.4	2 ± 0
Permanent teeth (DMFT)		
0-6 yr.	0	0
7-12 yr.	1.6 ± 1.7	1.9 ± 2.2
13-18 yr.	3.0 ± 3.6	1.2 ± 1.9
>18 yr	10.2 ± 8.3	4 ± 0

Table 3. Periodontal status by school

Periodontal status	School			
	St.Gerard's		Suksasongkrao	
	Mean sextant/person	Number (%)	mean sextant/person	Number (%)
Bleeding	1.3 ± 2.2	16 (40.0)	2.6 ± 2.7	30 (54.5)
Calculus	0.5 ± 1.4	6 (15.0)	0.4 ± 1.6	5 (9.0)
Calculus with bleeding	0.2 ± 0.9	3 (7.5)	0.7 ± 1.9	8 (14.5)
Pocket 4-5 mm.	0.1 ± 0.4	4 (10.0)	0.1 ± 0.3	4 (7.2)
Pocket >5 mm.	0	0	0	0

Table 4. Treatment Needs by school

Treatment Needs of dental caries	School	
	St.Gerard's Number (%)	Suksasongkrao Number (%)
Filling one side	25 (62.5)	31 (56.4)
Filling two sides	9 (22.5)	2 (3.6)
Filling >two sides	5 (12.5)	2 (3.6)
Root canal treatment	9 (22.5)	0 (0)
Extraction	17 (42.5)	13 (23.6)

Table 5. Enamel defect, malocclusion and cleft lip and/or palate by school

Abnormal condition	School	
	St.Gerard's Number (%)	Suksasongkrao Number (%)
Enamel defect	7 (17.5)	5 (9.1)
Malocclusion	19 (47.5)	37 (67.3)
Cleft lip and palate	1 (2.5)	0 (0)

St. Gerard's. So Suksasongkrao had lower dental caries than the normal population, just like the previously mentioned study of dental caries in children with Down' syndrome.

Gingivitis and calculus were the most common periodontal conditions among the children in our study, which agrees with a studies by Nunn and Murray (1987) and Ohito et al. (1993) wherein 37% of handicapped children 5-15 years old had gingivitis.

Our study showed a high prevalence of malocclusion among handicapped children at both schools, which agrees with other studies.[1,7,12,13] Many children at St. Gerard's needed fillings on one side 65% or an extraction 42.5%, while significantly fewer children at Suksasongkrao needed fillings on one side (56.4%) or an extraction (23.6%). Obviously, the children at both schools receive a minimum of dental care because their parents and care-givers are poor and, relatedly, because dental treatment for disabled children requires specialists who work at Khon Kaen Regional Hospital or the Dental Hospital at the Faculty of Dentistry, Khon Kaen University - Khon Kaen City. Clearly, socioeconomic status of the disabled children's family was also an important factor.[16,17] Moreover, parents were preoccupied by the disabilities to the neglect of oral and dental health. Dental treatment(s) were sought only in an emergency.[18,19]

Our study reveals that handicapped children have significant oral health problems requiring attention and preventative training for care-givers. However, national oral health policy neglects persons not in mainstream education institutions. Moreover the general attitude of health professionals to handicapped children was negative because of the inability to pay and the difficulty of coping with the fear of treatment among handicapped pediatrics patients.[4,16,17]

Data from this study should help the parents, oral health personnel and care-givers realized the importance of oral health promotion, prevention and treatment.[20-24] Mobile dental care in rural communities might reduce the incidence of dental caries.[6]

Conclusion

A campaign to promote the dental and oral health among urban and rural disabled children is needed.

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