

## โรคฟันผุในผู้ป่วยธาลัสซีเมียที่มารับการรักษาที่โรงพยาบาลศรีนครินทร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น

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## Dental Caries in Thalassemia Patients at Srinagarind Hospital, Faculty of Medicine, Khon Kaen University

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**หลักการและวัตถุประสงค์:** โรคฟันผุเป็นปัญหาในผู้ป่วยเด็กธาลัสซีเมีย ทำให้เกิดฟันผุลูกกลม ติดเชื้อ ปวด เป็นปัญหาต่อการบดเคี้ยวและทำให้เกิดภาวะทุพโภชนาการได้ วัตถุประสงค์ของศึกษานี้เพื่อศึกษาความชุกของการเกิดโรคฟันผุในผู้ป่วยธาลัสซีเมียที่มารับบริการที่โรงพยาบาลศรีนครินทร์ มหาวิทยาลัยขอนแก่น

**วิธีการศึกษา:** การศึกษาแบบตัดขวางนี้ดำเนินการระหว่างเดือนธันวาคม พ.ศ. 2548 ถึง เดือนกันยายน พ.ศ. 2549 ที่โรงพยาบาลศรีนครินทร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น มีผู้ป่วยธาลัสซีเมีย 104 คนที่สมัครใจเข้าร่วมในการศึกษานี้ เก็บรวบรวมข้อมูลจากแบบบันทึกทางการแพทย์ แบบสัมภาษณ์ และแบบบันทึกการตรวจฟัน การตรวจสภาวะฟันผุบันทึกโดยใช้ดัชนีดีเอ็มเอฟที (DMFT Index) การวินิจฉัยโรคฟันผุตรวจด้วยตาเปล่าใช้กระจกตรวจฟัน เครื่องมือเขียนฟัน และเครื่องมือตรวจสภาวะปริทันต์ตามเกณฑ์ขององค์การอนามัยโลก ปรับแบบสอบถามประกอบด้วยข้อมูลทั่วไป และการดูแลสุขภาพช่องปาก เก็บข้อมูลชนิดของธาลัสซีเมียจากแบบบันทึกทางการแพทย์ สถิติพรรณนาใช้ ความถี่ ร้อยละ ค่าเฉลี่ยและส่วนเบี่ยงเบนมาตรฐาน

**ผลการศึกษา:** ผู้ป่วยธาลัสซีเมียจำนวน 104 คน อายุเฉลี่ย  $11 \pm 4.82$  ปี (ต่ำสุด-สูงสุด = 2 ปี - 24 ปี) ผู้ป่วยที่เป็นเบต้าธาลัสซีเมีย และแอลฟาธาลัสซีเมียคิดเป็นร้อยละ 71.5 และร้อยละ 28.5 ตามลำดับ พบความชุกของการเกิดโรคฟันผุ ร้อยละ 88.5 ค่าดีเอ็มเอฟทีในฟันน้ำนม (DMFT) =  $2.28 \pm 3.65$

**Background and objective:** Dental caries is a problem in young thalassemia patients and it can lead to rampant decay, infection, pain, chewing problems and malnutrition. The objective of this study was to determine the prevalence of dental caries in thalassemia patients at Srinagarind Hospital, Khon Kaen University.

**Methods:** This cross-sectional study was conducted from December, 2005 to September, 2006 at Srinagarind Hospital, Faculty of Medicine, Khon Kaen University. One hundred and four thalassemia patients volunteered to participate in this study. Data on the patients were collected from medical records, questionnaires and dental examination records. The dental caries status were recorded using the DMFT index. Dental caries was diagnosed by visual examination using dental mirror, explorer and periodontal probe as per the criteria recommended by the World Health Organization. A questionnaire contained demographics and oral hygiene care. We collected type of thalassemia from medical record. Descriptive statistics used frequency, percent, mean and standard deviation.

**Results:** The number of thalassemia patients were 104. Age averaged was  $11 \pm 4.82$  years old (min-max = 2 - 24 years old). The  $\beta$  thalassemia and  $\alpha$  thalassemia were 71.5% and 28.5% respectively. The prevalence of dental caries was 88.5%. Decayed, missing and filling of

ซี่/คน ค่าดีเอ็มเอฟทีในฟันแท้ (DMFT) =  $3.12 \pm 3.72$  ซี่/คน พบฟันผุในฟันน้ำนมซี่ #85 #65 #74 #54 และฟันแท้ซี่ #46 #36 #16 #26 มากกว่าฟันซี่อื่นๆ

**สรุป:** ความชุกของการเกิดโรคฟันผุในการศึกษานี้พบร้อยละ 88.5 และจำเป็นที่จะต้องได้รับการบูรณะทางทันตกรรม

**คำสำคัญ:** ฟันผุ ธาลัสซีเมีย

deciduous teeth (DMFT) were averaged at  $2.28 \pm 3.65$  teeth/person. Decay, missing and filling of permanent teeth (DMFT) averaged  $3.12 \pm 3.72$  teeth/person. We found that #85 #65 #74 #54 in deciduous teeth and #46 #36 #16 #26 in permanent teeth had dental caries more than the other type of tooth.

**Conclusion:** The prevalence of dental caries in this study was 88.5% which need the restorative dental care.

**Keywords:** dental caries, thalassemia

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## Introduction

Thalassemia is common in Thai with an average prevalence rate of 1 % (600,000 people)<sup>1</sup>. Thalassemia is a group of inherited defect in synthesis of either the  $\alpha$  or  $\beta$  globin chains of hemoglobin, referred to as  $\alpha$  and  $\beta$  thalassemia, respectively. Based on their clinical and genetic entities, thalassemias are classified as homozygous, heterozygous, or compound heterozygous. The homozygous form of  $\beta$ -thalassemia (thalassemia major) exhibits the most severe clinical symptoms with marked orofacial defects. The heterozygous form of the disease (thalassemia minor) is mild and considered to be clinically asymptomatic. An intermediate form of thalassemia may also occur<sup>2</sup>. As a result of chronic blood transfusions in thalassemia major, can lead to build up excessive iron load, develop hemochromatosis and affect many organs. Extramedullary hematopoiesis also results in bony deformities. In the face, enlargement of jaw and its alveolar process produce various and serious malocclusion<sup>3</sup>. Thalassemia is a disease which not only affects the patient but also leaves a devastating psychosocial effect on family of the patient. Dental caries in Thai children is a problem associated with plaque, microorganisms, the intake of refined carbohydrates and oral health care. Oral health survey of dental health division, Thailand in 2006-2007 showed that the prevalence of dental caries in 3, 5, 12 and 15 years old were 61.37 %, 80.64%, 56.87% and 66.33% respectively<sup>4</sup>. Kantapanit, et al. studied in Chiang Mai found that thalassemia patients had dental caries in deciduous teeth 1.1 time higher than healthy children and had dental caries in permanent teeth 1.4 time

higher than healthy children<sup>5</sup>. AL-Wahadni, et al. studied in Jordan found that dental caries was significantly higher in thalassemia patients group when compared to the healthy controls<sup>6</sup>. Most of thalassemia patients in Thailand are missed oral health prevention campaigns, so lack proper treatment and are at risk of oral morbidity. Dental caries can also lead to rampant decay, infection, pain, abscesses, chewing problems and malnutrition. There are very few studies about the prevalences of dental caries in thalassemia patients in Thailand and there is no study in northeastern Thailand. The purpose of this study was to determine the prevalence of dental caries in thalassemia patients at Srinagarind Hospital, Khon Kaen University.

## Materials and methods

This cross-sectional study was conducted from December, 2005 to September, 2006 at Srinagarind Hospital, Faculty of medicine, Khon Kaen University. One hundred and four thalassemia patients volunteered to participate in this study. Data on the patients were collected from medical records, questionnaires and dental examination records. The dental caries status were recorded using the DMFT index. Dental caries was cavitated lesion that certainly caught the probe with softened floor/wall of undermined enamel. Dental caries was diagnosed by visual examination using dental mirror, explorer and periodontal probe as per the criteria recommended by the World Health Organization<sup>7</sup>. The examiners included two dentists who calibrated the standard of examining using a kappa analysis ( $k = 0.76$ ). The dentists repeated 10% of the oral examinations (kappa analysis =

0.90). A questionnaire contained demographic such as age, sex, educational level, family income and oral hygiene care. We collected type of thalassemia from medical record. Descriptive statistics used frequency, percent, mean and standard deviation. This study was approved by the Khon Kaen protocol ethics committee for Human Research.

### Results

The number of thalassemia patients were 104, 46 (53.7%) males and 58 (47.3%) females. Age averaged was  $11 \pm 4.82$  years old (min-max = 2 - 24 years old). Patient's ages were divided into three age groups according to their dentition (2-5 years, 6-12 years and 13-24 years). The 2-5, 6-12 and 13-24 age groups were 16.3 %, 48.1 % and 35.6% respectively.  $\alpha$  thalassemia and  $\beta$  thalassemia were 71.5% and 28.5% respectively. The prevalence of dental caries was 88.5%. Decayed, missing and filling of deciduous teeth (DMFT) averaged  $2.28 \pm 3.65$  teeth/person. Decay, missing and filling of permanent teeth (DMFT) averaged

$3.12 \pm 3.72$  teeth/person. (Fig.1) The averaged DMFT of 2-5, 6-12 years old were  $5.23 \pm 5.2$ ,  $2.94 \pm 3.40$  teeth/person respectively. The averaged DMFT of 6-12, 13-24 years old were  $2.58 \pm 2.84$ ,  $5.29 \pm 4.0$  teeth/person respectively (Fig. 2). We found that #85 #65 #74 #54 in deciduous teeth and #46 #36 #16 #26 in permanent teeth had dental caries more than the other type of tooth. (Fig. 3-4)

### Discussion

The present study showed that prevalence of dental caries was high (88.5%) especially in molar teeth and need for restorative dental care. Patient data was analyzed in three age groups according to their dentition. (deciduous, mixed and permanent). The DMFT index in 2-5 age group was similar to normal Thai but the DMFT index in 6-12, 13-24 age group were higher than normal Thai<sup>4</sup>. The DMFT index in 6-12, 13-24 age group were less than the study in 6-12, 13-20 age group in Shahid Ashrafi-Isfahani thalassemia clinic affiliated with Shahid Beheshti University of Medical Sciences

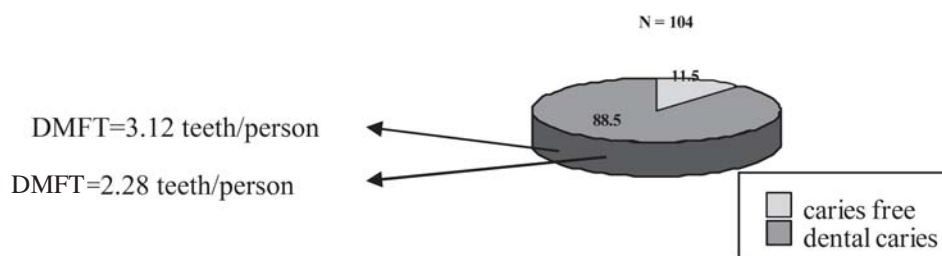


Fig 1 Prevalence rate of dental caries

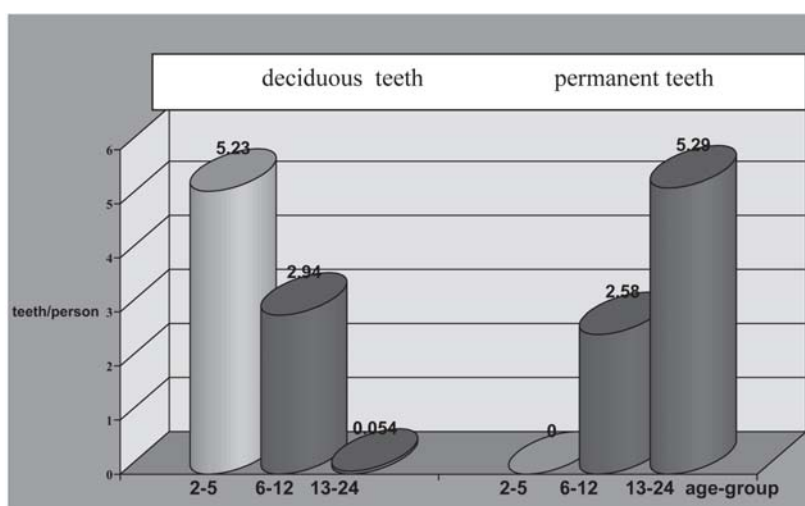


Fig 2 Mean DMFT Index by age group

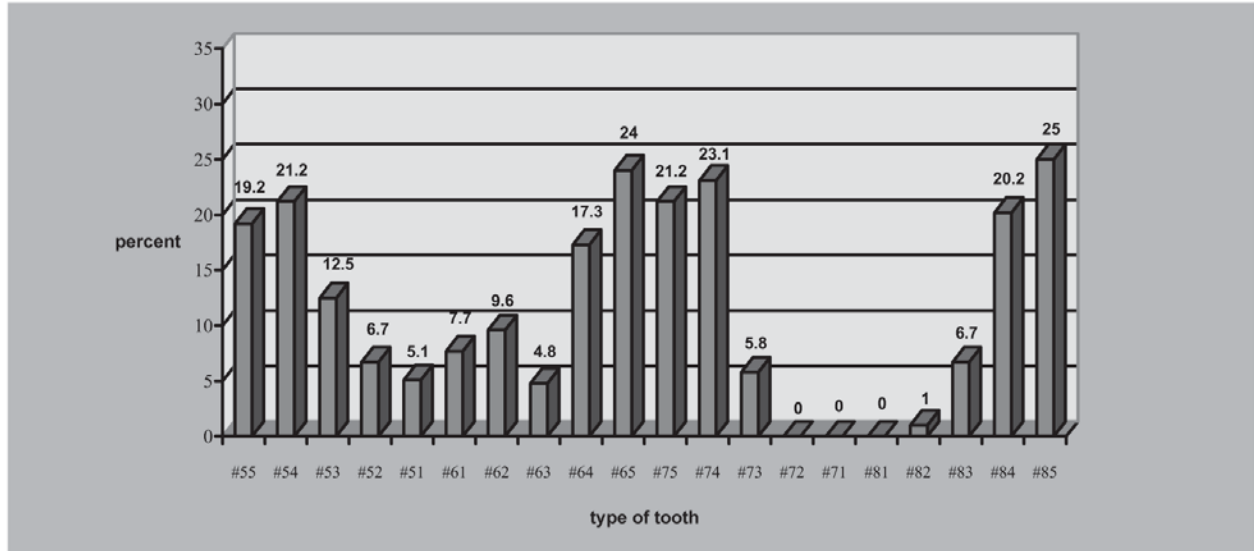


Fig 3 Prevalence rate of dental caries in each deciduous tooth

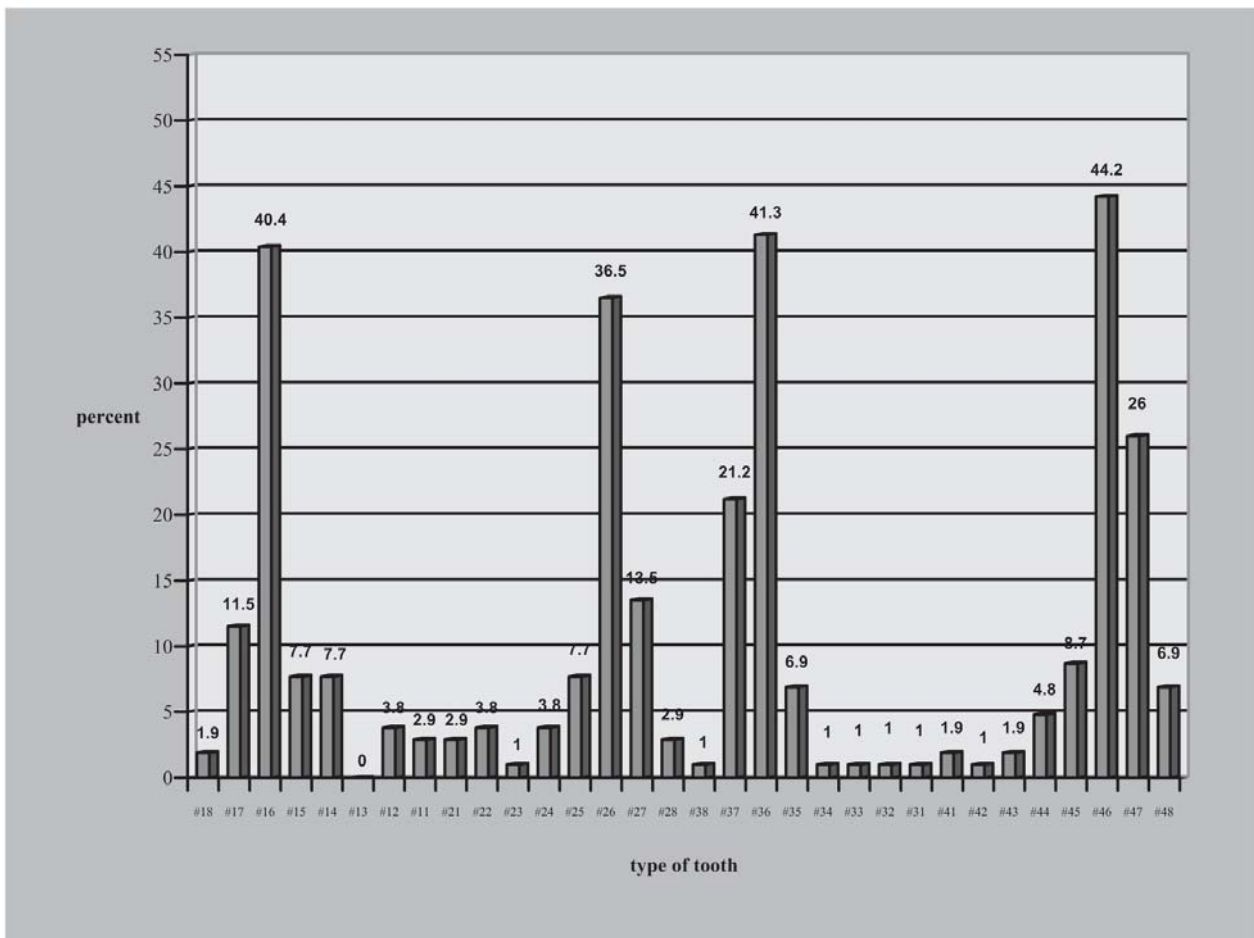


Fig 4 Prevalence rate of dental caries in each permanent tooth

in Tehran<sup>8</sup> and the study in the 6-12, 15-18 age group of thalassemia patient in Irbid Thalassemic Centre at Jordan<sup>9</sup>. AL-Wahadni, et al. found that dental caries was significantly higher in thalassemia patients group compare to the health controls<sup>6</sup>. On the other hand, Scutellari et al. found similar incidence of dental caries in beta thalassemia patients and normal control<sup>10</sup>. Luglie, et al. showed that colonization with *Streptococcus mutans* in thalassemia patients has been found to be higher which may also had a role in higher caries prevalence seen in them<sup>11</sup>. Kaplan, et al. explained that dental caries in these patients appears to be associated primarily with dental neglect. The parents are more concerned with the serious physical problems, paying lesser attention to the dental ailments, and only seek dental care when the child is in pain<sup>12</sup>. Therefore, emphasis to educate such group in the prevention of dental caries should be considered. However a high caries prevalence in thalassemia patients can also attribute to poor oral hygiene, improper dietary habit and lack of motivation of these patients.

Limitation of this study should be mentioned. DMFT index is based on in-field clinical examination of individuals by using a probe, mirror and explorer. It is done without radiographs to detect interproximal caries. It underestimates real caries prevalence.

The findings and application of this study may have implications for dental caries prevention in thalassemia patients at Srinagarind Hospital, Khon Kaen University.

**Conclusion:** The prevalence of dental caries in this study was 88.5% and need for restorative dental care.

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