

# Prevalence of Oral Reading Problems in Thai Students with Cleft Palate, Grades 3-5

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**Objective:** To investigate prevalence of oral reading problems in Thai language skills, and types of oral reading in students with cleft palate, Grades 3-5.

**Material and Method:** Thirty students with cleft palate, Grades 3-5 in the Northeast Thailand, were recruited. The students read the standard oral reading passages which are The Basic Education Commission of Thailand and consisted of basic words in curriculum of Thai language for students, Grades 1-3. Oral reading scores were analyzed based on the Basic Education Commission, Ministry of Education, Thailand.

**Results:** The research findings revealed that: 1) The prevalence of oral reading problems in the students with cleft palate, Grades 3-5 was 16.66%; 2) Cluster was the most common problem in oral reading based on Thai language skills, followed by tone, silent consonant, irregular final consonant, change vowel, topic of word, inherent vowel, regular final consonant and word without final consonant; and 3) Types of oral reading problems were classified as substitution (56.99%), omission (36.92%), addition (1.79%) and distortion (1.79%).

**Conclusion:** Students with cleft palate, Grade 3-5 were at risk of oral reading difficulty.

**Keywords:** Reading problems, Cleft palate, Reading difficulty

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Reading has both oral reading and reading in mind<sup>(1)</sup>. Oral reading is a fundamental of advanced reading<sup>(2)</sup>. There is evidence that teachers need to investigate students' reading problems and determine the causes of reading difficulties<sup>(1)</sup>. Reading is an important process in human's knowledge searching<sup>(3)</sup>. Preliminary elements of the reading need normal anatomy and physiology, including articulators or speech organ such as nose, mouth, tongue, teeth, palate and larynx. If there is any abnormal speech organ(s), e.g. cleft lip and palate, it will cause articulation defects<sup>(4)</sup> and results in oral reading problems.

Cleft lip and Cleft palate (CLP) are common birth defects of craniofacial abnormalities, which cause the failure of oral parts' joining to shape face and palate<sup>(5)</sup>. CLP impact image of face configuration, swallowing, speech and hearing problems<sup>(6)</sup>. After lip and palate repair, most children with cleft lip and

palate remain velopharyngeal insufficiency. The children generally try to compensate by producing speech with sounds behind velopharyngeal valve. The previous study found that after surgery, the children with CLP had articulation disorders (88.56%), resonance disorders (43.26%), voice abnormality (19.13%), and delayed speech and language development (16.33%)<sup>(7)</sup>. Children with articulation disorders usually have oral reading difficulties and incorrect spelling<sup>(8)</sup> as well as difficulties in reading and writing skills<sup>(9)</sup>.

Reading is an essential index for students' learning standard. If oral reading problems are not corrected early, they would become habitual and difficult to correct. A study of 172 students with CLP in elementary school from Iowa, United States, found that 35% and 17% presented with moderate and severe degree of reading disabilities, respectively<sup>(10)</sup>.

The objectives of this present study were to investigate prevalence of reading problems in Thai language skills and types of oral reading disorders based on articulation errors in students with cleft palate (CP), Grades 3-5. These could be guidelines for teachers and multidisciplinary teams in planning programs to correct reading difficulties and providing special

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programs to develop future reading skills at an early stage.

### Material and Method

The protocol of this present study was approved by the Khon Kaen University Ethics Committee for Human Research (HE581290). A survey was conducted with 30 students with CP (with or without cleft lip), who studied in Grades 3 to 5, completed the first semester of an academic year of 2015 and located in Northeast Thailand.

Five Grade-3 Standard Oral Reading Tests by the Ministry of Education, Thailand were used. Each passage was a story with no longer than 10 lines and consisted of basic words for Thai language skills for students in Grades 1 to 3. Scoring was divided into 4 levels<sup>(11)</sup> as follows:

- 36-45 scores: very good
- 27-35 scores: good
- 18-26 scores: fair
- 0-17 scores: poor

The participating students with CP randomly selected one of five passages and then read within five minutes. The students stopped reading when the researcher gave the timeout signal. Audio recordings were made during the tests by Samsung Grand 2. Recordings were recoded by the first research assistant. Then, the researcher and the second research assistant (who was studying in a master degree in curriculum and instruction in special education and had a certificate in the course of screening the disabled education) separately scored of oral readings from audio recordings. A case-record form was used for individual oral reading scoring. If there was any disagreement of scoring between the researcher and the second research assistant, the audio recording would be replayed and final agreements would be made based on standard guidelines by the Ministry of Education<sup>(11)</sup>.

Descriptive analyses were used for oral reading scores, including the scores of <27 or <60% was considered as having oral reading problems<sup>(11)</sup>. Percentage of oral reading problems was analyzed based on standards for Thai language skills and percentage of types of oral reading problems was analyzed based on articulation errors.

### Results

General characteristics of students with CP, Grades 3-5, are shown in Table 1. The scores of oral reading tests from the 30 participants are demonstrated in Table 2. The majority showed good and very good

level of reading, whilst 16.66% had oral reading problems (fair and poor levels).

Percentage of Thai Language skills were displayed as Table 3. The most common problem in Thai language skills was word with consonant clusters and the least common problem was word without final consonants.

The types of oral reading based on articulation types in the participating students were divided into four types and percentage of each type was shown in Table 4.

The students with CP had a total of 279-word incorrect reading based on speech disorder types. The most common type was substitution and the least common type was omission.

### Discussion

The prevalence of oral reading problems in the students with CP, Grade 3-5 based on cutoff point of <27 scores or <60% (fair and poor) was 16.66% which was lower than the previous study with the prevalence of 52%<sup>(10)</sup>. This difference might have resulted from the difference of cutoff point to determine oral reading problems. The criteria in the previous study used oral reading score <80% of a total score to be a cutoff point for oral reading problems, whilst this present study used <60% to be a cutoff point based on the Basic Education Commission, Ministry of Education, Thailand. If this present study uses a cutoff point for oral reading problems of <80%, the prevalence will be 63.33% which shows that the students with CP have high risks for oral reading problems.

The Basic Education Office, Ministry of Education conducted a literacy survey and found that normal students, Grade 3 had reading difficulties of 5%<sup>(12)</sup>. The students with CP thus had oral reading problems higher than normal students. Language development in reading requires understanding of the word before ready to pronounce words<sup>(13)</sup>. If reading assessment includes both oral reading and reading comprehension, prevalence of reading problems may be higher. Further research should focus on both oral reading and comprehensive skills. After the survey, the Basic Education Office, Ministry of Education established campaign to help students who had reading difficulties in primary school (The project entitle “No students with illiteracy in the year 2015”), including teaching individuals to read. A month post-intervention revealed the prevalence of reading difficulties had decreased to 2.8%.

Rates of oral reading difficulties in students

**Table 1.** Characteristics of the participating students with CP, Grades 3-5

No.	Code	Age	Gender		Grade			Diagnosis
			Boy	Girl	G.3	G.4	G.5	
1	S1	9	✓		✓			CLP
2	S2	9		✓		✓		CLP
3	S3	9	✓		✓			CP
4	S4	8		✓	✓			CLP
5	S5	10	✓			✓		CLP
6	S6	9		✓		✓		CP
7	S7	9		✓		✓		CLP
8	S8	10	✓				✓	CLP
9	S9	9		✓	✓			CLP
10	S10	9	✓			✓		CLP
11	S12	10	✓				✓	CLP
12	S13	9	✓			✓		CLP
13	S14	8	✓		✓			CLP
14	S15	10	✓				✓	CP
15	S16	10	✓		✓			CLP
16	S17	8		✓	✓			CLP
17	S18	10		✓			✓	CLP
18	S19	8	✓		✓			CLP
19	S22	9		✓		✓		CP
20	S23	10		✓			✓	CLP
21	S24	10		✓			✓	CLP
22	S25	10	✓				✓	CLP
23	S26	8		✓	✓			CLP
24	S27	9		✓			✓	CLP
25	S28	8	✓		✓			CLP
26	S29	8	✓		✓			CLP
27	S30	9		✓		✓		CLP
28	S31	10	✓			✓		CLP
29	S32	11		✓	✓			CP
30	S33	9		✓		✓		CLP
Total			15	15	12	10	8	

CLP = Cleft lip and palate; CP = Cleft palate

**Table 2.** Levels of oral reading in the students with CP, Grades 3-5

Level of oral reading	Total No.	Percentage
Very good	11	36.67
Good	14	46.67
Fair	1	3.33
Poor	4	13.33

with CP were higher than regular students, although surgical correction was performed in early period (cheiloplasty at the age of three months and palatoplasty at one year). The students with oral reading

problems had many articulation errors. Influencing factors of a high rate of oral reading problems in the students with CP included: 1) the students still have articulation defects from velopharyngeal insufficiency (VPI)<sup>(7)</sup> or habitual speech patterns that resulted in abnormal speech and oral reading problems; 2) Some children with CP could not access speech services due to limitations of speech therapy and number of speech and language pathologist<sup>(14-16)</sup>. Therefore, accessibility of speech services in Thailand would be one of critical health care services that are needed in order to provide speech therapy on time (before seven years of age) which will prevent oral reading problems and articulation errors in children with CP.

**Table 3.** Percentage of reading problems based on the Thai language skills

Category	Incorrect reading	Percentage	Problem order
Words without final consonant	21.50	14.33	9
Words with regular final consonants	30.50	20.33	8
Words with irregular final consonants	45.00	30.00	4
Words with inherent vowel	35.00	23.33	7
Words with change vowel	37.00	24.67	5
Words with consonant clusters	109.00	72.67	1
Topic of words	36.00	24.00	6
Words with tones	60.00	40.00	2
Words with silent consonants	46.00	30.67	3

**Table 4.** Types of Articulation in the students with CP, Grade 3-5

Types of articulation	Words of error	Percentage
Substitution	159	56.99
Omission	103	36.92
Addition	5	1.79
Distortion	5	1.79
Error word	7	2.51
Total	279	100.00

Therefore, students with CP and reading problems should be provided systematic and early reading resolutions in elementary schools. Students with CP should also be explored in articulation errors and provided cooperative programs to correct their reading skills by teachers and speech and language pathologists.

Regarding Thai language skills, cluster word was the most common problem (72.67%) in the students with CP. This is similar to normal students who found difficulties in cluster word (80.53%)<sup>(17)</sup>. Another common reading difficulty in the students with CP was substitution /l/for/r/. This supports the previous study that found the most common speech errors in children with CP were /r/ and s/<sup>(18)</sup>. For cluster, the second common consonants are generally /r/ and /l/, most normal students and students with CP omit/r/and/l/. These were important problems for both normal students and students with CP and need to be solved early during primary school.

Substitution was represented for 56.99% of the types of oral reading problems in the students with CP. Most students substituted velar, glottal and pharyngeal such as /ʔ//h/, /k/ for target sounds. This

supports the previous study that found students with CP mostly produced velar, glottal and pharynx<sup>(19)</sup>. Most of substitution /l/ substitution /r/ also found in normal students. Omission was found in 36.92%, in which the omission /r/ and /l/ in cluster words were common. Another error type of 2.51% was found in words that students could not read or used other words with a different meaning for target words.

The present study found that one student with fair reading level and two students with poor reading levels had speech and language delays. These two students had learning disabilities and ADHD that impact on reading skills and might impact educational achievement<sup>(20)</sup>. Oral reading problems may be found to be higher in students with CP, cause delayed speech and language development and also coincide with students' achievements<sup>(9)</sup>.

CP critically impacts oral reading skills. Training teachers should be made aware of articulation disorders and provide early interventions as well as organize activities to promote leaning in articulation and teaching in oral reading in classrooms. Cooperation should be organized between teachers and speech and language pathologist for simultaneously solving articulation disorders and oral reading problems. Otherwise, teachers should give priority to correct cluster words and words with tone because they were the common errors in students with CP. The schools should also provide screening of reading problems for an early detection and interventions. Multiple media for tutoring students with CP who have problems with oral reading should be provided for students to achieve educational aims.

This present study is the first study that explored oral reading problems in children with CP in Thailand. However, it was limited by a small sample

size. Further study should investigate oral reading difficulties in a large scale and also related factors, e.g. such as articulation defects, writing problems, academic achievement.

### Conclusion

The prevalence of oral reading problems in the students with CP was 16.66%. Cluster and substitution were the most common problems. Students should be examined for these problems during primary school age in order to correct the problems early and prevent negative consequences on language skills and academic achievement.

### What is already known on this topic?

Students with CP mostly have residual abnormal function of speech after repair that was the main cause for articulation disorders.

### What this study adds?

Students with CP had high risk of oral reading problems that might effect achievement in Thai language skills. Early assessments and plans should be established to support academic success.

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### Potential conflicts of interest

None.

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### ความชุกและปัญหาการอ่านออกเสียงของนักเรียนที่มีภาวะเพดานโหว่ระดับประถมศึกษาปีที่ 3-5

ประจิมมา อิงคภาคย์, เบญจมาศ พระธานี

**วัตถุประสงค์:** เพื่อศึกษาความชุกของปัญหาการอ่านออกเสียงตามหลักภาษาไทยและประเภทของปัญหาในการอ่านออกเสียงของนักเรียนที่มีภาวะเพดานโหว่ในระดับประถมศึกษาปีที่ 3-5

**วัสดุและวิธีการ:** นักเรียนมีภาวะเพดานโหว่ระดับประถมศึกษาปีที่ 3-5 ในภาคตะวันออกเฉียงเหนือจำนวน 30 คน เป็นกลุ่มเป้าหมายของการศึกษาคั้งนี้ นักเรียนได้รับการประเมินการอ่านออกเสียงโดยการอ่านด้วยแบบทดสอบที่เป็นมาตรฐานของสำนักงานคณะกรรมการการศึกษาขั้นพื้นฐาน ซึ่งเป็นบทอ่านที่ประกอบด้วยคำในบัญชีคำพื้นฐานสำหรับระดับชั้นประถมศึกษาปีที่ 1-3 โดยให้คะแนนตามเกณฑ์ของสำนักงานคณะกรรมการการศึกษาขั้นพื้นฐาน

**ผลการศึกษา:** พบว่า 1) ความชุกของปัญหาการอ่านออกเสียงของนักเรียนที่มีภาวะเพดานโหว่ระดับประถมศึกษาปีที่ 3-5 คิดเป็นร้อยละ 16.66 2) คำควบกล้ำเป็นปัญหาการอ่านออกเสียงตามหลักภาษาไทยที่พบมากที่สุด ปัญหาที่พบบรองลงมาตามลำดับคือ คำที่มีรูปวรรณยุกต์ คำที่มีตัวกรันต์ คำที่มีตัวสะกดไม่ตรงตามมาตรา สระเปลี่ยนรูป อักษรนำ สระลดรูป คำที่มีตัวสะกดตรงตามมาตรา และคำที่ไม่มีตัวสะกด 3) ประเภทของปัญหาการอ่านออกเสียงพบเรียงลำดับดังนี้การแทนที่เสียงคิดเป็นร้อยละ 56.99 การละไม่ออกเสียงเสียงร้อยละ 36.92 การเพิ่มเสียงเข้าไปในคำร้อยละ 1.79 และการผิดเพี้ยนของเสียงร้อยละ 1.79

**สรุป:** นักเรียนมีภาวะเพดานโหว่ระดับประถมศึกษาปีที่ 3-5 มีความเสี่ยงต่อปัญหาการอ่านออกเสียง

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