

Development of Speech Services for People with Cleft Palate in Thailand: Lack of Professionals

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Cleft lip/palate is one of the most common birth defects and has a high incidence in Thailand. Most children with cleft still have social stigma from speech and language defects after surgical treatment. Speech and language therapies are required at an early age and require long-term care until teenager or adult. Unfortunately, there are insufficient speech services for cleft because of a lack of qualified speech and language pathologists in Thailand. Development consisted of two remedy modalities of bottom-up and top-down models, Community-Based Speech Therapy Model for people with Cleft Lip Cleft Palate including networking and standard assessments of both subjective and objective measurements. That might be the best and most suitable way to solve problems of lacking speech services in Thailand or developing countries which have similar contexts.

Keywords: Speech therapy, Cleft, Community-based model, Developing country

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Thailand is a developing country in Asia and located at the centre of the Indochina peninsula in Southeast Asia. It is bordered to the north by Burma (Myanmar) and Laos, to the east by Laos and Cambodia, to the south by the Gulf of Thailand and Malaysia, and to the west by the Andaman Sea and the southern extremity of Burma (Myanmar). Its maritime boundaries include Vietnam in the Gulf of Thailand to the southeast and Indonesia and India in the Andaman Sea to the southwest.

Cleft lip/palate is one of the most common birth defects, but especially so in developing countries where high risk is associated with deficiencies or poor maternal vitamin and nutritional supplements⁽¹⁻³⁾ or mothers' environmental exposure^(4,5). This situation is prevalent among low socioeconomic status populations. The worldwide incidence of cleft lip/palate is between 0.30 and 2.65/1,000 live births⁽⁶⁾. Cleft lip/palate is indeed a major public health concern in Thailand, where the incidence of cleft lip/palate is between 1.10 and 2.49/1,000 live births⁽⁷⁾. There are 59 qualified speech and language pathologists (SLPs) for cleft palate in Thailand⁽⁸⁾. Fifty-two of them have active working and 45 SLPs work in government health care units that have responsibility for estimated 65.9 million

people in Thailand⁽⁹⁾. Therefore, there is a lack of speech and language services for cleft palate, particularly in Northeast of Thailand, which has the highest incidence of cleft palate, but only 2 qualified SLPs, who provide speech therapy for 21 million Thai people.

Surgical repair of clefts generally resulted in a significant reduction in the social configuration associated with cleft. Unfortunately, speech and language deficits including compensatory articulation defects, resonance disorders, voice disorders and intelligibility are still common problems⁽¹⁰⁻¹⁷⁾. The frequency and severity of speech disorders depend on how late surgical repair was performed, and the degree to which early speech and language stimulation was lacking, particularly in developing countries, e.g. Thailand⁽¹⁸⁻²⁰⁾, Indonesia⁽²¹⁾, Vietnam^(22,23), Lao People's Democratic Republic^(24,25), where accessibility to speech therapy are not available or insufficient.

Surgical care including mobile units from non-profit organizations both local and international unit have treated congenital defects of appearance in children with cleft lip/palate in remote areas of Thailand. Unfortunately, most teams primarily addressed surgical issues with little attention to an interdisciplinary approach to cleft care⁽²⁶⁾. Speech and language impairment remains a critical requirement considering (at the time of surgery), the majority of patients still need therapy. Children with cleft lip/palate generally, receive delayed speech therapy (or none at all) because of a shortage of qualified speech-language

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pathologists. There were many reasons that relate to inadequacy of trained staff and lacking of speech services including⁽¹⁹⁾.

1) Lack of awareness and knowledge of the magnitude of problems caused by speech and language disorders. People did not understand nor realize the magnitude of the short- and long-term problems. For example, how to take care of infant feeding, grappling with society reactions, getting service from the healthcare system and speech and language stimulation.

2) Inadequate number of both qualified speech pathologists and multidisciplinary hospital rehabilitation teams. Healthcare units or local hospitals cannot serve cleft lip/palate children because of a lack of plastic surgeons, speech pathologists, orthodontists, specialist nurses and audiologists. Moreover, no effective referral system or network is in place to coordinate complicated services.

3) Low socioeconomic status: Most cleft lip/palate families are poor and cannot afford treatment, not even transportation, accommodation, living expenses, etc. In addition, long term treatment and/or many surgeries for children led to the development of various phobias.

4) No speech services: Sometimes families recognized the problems, but could not find any form of speech therapy at any level of the healthcare system.

Bottom-up development

There were many speech programs for developing countries where speech services are not available or lack of SLPs, such as Sri Lanka^(27,28), Vietnam^(22,23), Indonesia⁽²¹⁾, Mexico⁽²⁹⁻³²⁾, Lao People's Democratic Republic^(24,25). These were established depending on area contexts, e.g., lack or number of SLPs, non-profit organization which related to cleft palate funding, government policy. For Thailand there was the first curriculum for speech and language pathology and audiology in 1971, Thai Speech and Hearing Association was established in 1997⁽⁸⁾. There are currently still insufficient SLPs and speech services. Therefore, speech services for cleft palate in Thailand was started⁽¹⁹⁾. The consensus of development of a Community-Based Model for Speech Disorders for Children with Cleft lip/palate in Thailand by combination the principle of community-based rehabilitation (CBR), Primary Health Care (PHC) and institutional medical approaches was created for reaching and treating speech as followings:

Stage I: Consensus from institutional medical or

professional approaches

Institutional medical approaches: A consensus meeting on Community-Based Speech Therapy Model for Children with Cleft Lip/Palate, as part of the First Thai International Congress on Interdisciplinary Care for Cleft Lip/palate 2003, December 1-4, 2003 was summarized and planned by international experts and local professionals related to cleft palate in developing countries. The strengths and weaknesses of each healthcare unit mentioned previously were also included⁽¹⁹⁾. Process of development of The Community-Based Model for Speech Therapy in Thailand was presented as Fig. 1⁽¹⁹⁾.

Stage II: Consensus from Primary Health Care

Primary Health Care: A consensus meeting on Development of Interdisciplinary Teams, Networking and Holistic Care in Quality of Life, Health Promotion, Speech and Language Intervention for Thai Cleft Lip/Palate, in Community, June 3-4, 2004 was realized and analyzed by groups of health care providers, children's parents or caregivers.

A group of speech and language pathologist (SLPs) interested in solving problem in cleft palate in Thailand had brain storming and concluded the consensus of CBR, institutional medical approaches, and PHC to be "Community-Based Speech Therapy

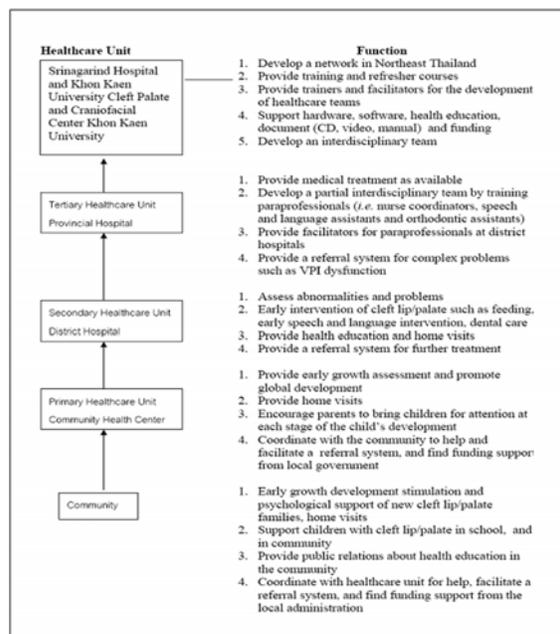


Fig. 1 The Community-Based Model for Speech Therapy

Model: For Children with Cleft Lip/palate Model as in Northeast Thailand⁽¹⁹⁾.

Stage III: Model implementation Training for the trainers

The Model was implemented in 2005 through two workshops entitled, "Training for Trainers" for eight SLPs interested in CLP. The objectives of these workshops for speech and language pathologists were to: 1) understand and realize the concept of an interdisciplinary approach for CLP and refer patients to appropriate treatment; 2) provide appropriate assessment and treatment for CLP; and 3) gain experience and knowledge in training others in basic speech and language management. After the workshops, a manual for speech and language intervention for CLP was issued. This was revised after trials in two speech camps were conducted⁽²⁰⁾.

The Community-Based Model for Speech Therapy was a national project in 2007, under the aegis of the "Smart Smile & Speech Project" in celebration of the 50th birthday of Her Royal Princess Sirinthorn. Six projects were proposed to solve the shortage of trained personnel to provide services for CLP children with speech, language and hearing problems by a group of SLPs who realized the lack of speech services for cleft palate which has a high incidence and common defect in Thailand⁽²⁰⁾.

1. A workshop for SLPs dealing with assessment and intervention for speech, language and hearing problems in CLP was conducted. The objectives of this workshop were to provide and exchange knowledge and information related to management of speech and language problems, training for standard perceptual assessment and establishment of the standard protocol for speech services in CLP in Thailand.

2. A workshop for training in screening and early intervention for speech, language and hearing problems in cleft lip and palate was conducted for 57 healthcare providers, mostly nurses. The objectives of this workshop were to provide basic knowledge and information related to speech and hearing assessment and services in CLP, both theory and practice. The percentage of agreement and Kappa coefficients were used to assess the agreement among SLPs and speech and language assistants.

3. Four workshops of speech camps were conducted to continue education and practicing for healthcare workers. The camps also trained parents and caregivers how to conduct a home program for

their CLP children. The hands-on camps were held in 4 parts of Thailand: 1) the Central region at Chonburi Hospital, Chonburi; 2) the Southern region in Trang Hospital, Trang; 3) the Northeast region in Sappasithprasong Hospital, Ubon Ratchathani; 4) the Northern region at Rajana-garindra Institute of Child Development, Chiangmai.

There were several speech camps *e.g.* three-day speech camps in Amnatchareon Province in 2006⁽³³⁾, Suwanaphum, Roiet Province in 2007^(18,34), Nakhonsithammarat in 2009. These speech camps could significantly decrease number of articulatory defects in children with cleft lip/palate. Results indicated that a speech camp was the best way to solve lack of speech services in the shortest time period in developing countries, particularly in countries where qualified SLPs are available, but not enough to meet demand. These speech camps can solve lack of speech services in the shortest time, the realization of mid- and long-term solutions was also considered. Khon Kaen Community-Based Speech Therapy Model for Children with Cleft Lip/palate by local health care providers was established in 2010-2011. This model was launched including 3-day speech camp and 6 1-day follow-up speech camps. Six local health care providers in district hospitals have worked as speech assistants (SAs) and give speech practice for children with cleft lip and palate at home once a week for 9 months. SAs, children and parents or caregivers were monitored speech and language therapy by follow-up speech camps once for 1 1/2 months for 6 times. During this period, parents or caregivers give speech training every day at home. Both local SAs and parents or caregivers had to fill record book and were monitored by SLPs during follow-up speech camps. This model significantly also decreased number of articulatory defects. Extending Khon Kaen Community-Based Speech Therapy Model for people with Cleft Lip Cleft Palate is planned to apply in Chiangrai, Northern Thailand with support from Smile Train, Transforming Faces Worldwide, The Thai Cleft Lip-Palate and Craniofacial Association, as well as Tawanchai Foundation, Khon Kaen University in the near future.

Networking of speech therapy with Khon Kaen Community-Based Speech Therapy Model and Multidisciplinary approaches for people with Cleft Lip Cleft Palate is running for continuing long-run speech therapy for cleft palate by local health care providers in 2012-2013. Online consultation would be applied for continuing speech therapy networking. If this networking is successful for remedy speech defects in

cleft, health care providers can be long-term speech assistants with online consultation.

Top-down Development

Development standard objective and perceptual assessment

Speech characteristics in patients with cleft palate have typical patterns that include delayed speech and language development, articulation deficits, resonance disorders, voice disorders and poor intelligibility. There needs to be a reporting system developed as a standardized routine protocol that would be a more consistent reporting system and a means to compare speech outcomes across centers, languages and within languages in order to make valid comparisons. According to overload working and lack of qualified speech and language pathologists (SLPs) for cleft lip/palate in Thailand, there are a few concerns about standardized and reliability of a speech and language assessment reporting system. Effectiveness of successful working on cleft palate is difficult to evaluate. Therefore, standard assessments both objective and subject measurement required for consideration.

Thai standard assessment was not available in the last decade. A few standard passages and protocols for nasometry were established for cleft palate in Thailand⁽³⁵⁻³⁷⁾. These standard nasalance scores and passages were suitable for use as a baseline for the objective assessment of velopharyngeal insufficiency and rehabilitation planning in Thai children.

For perceptual assessment, several universal reporting systems have recently been developed and attempted to use within languages, across languages, at various center programs and in other countries, including the Cleft Audit-Protocol for Speech-Augmentation (CAPS-A)⁽³⁸⁾ and speech assessment in Scandcleft Project⁽³⁹⁾ were as such systems. The CAPS-A was originally developed in 1994 as GOS.SP.ASS⁽⁴⁰⁾. The GOS.SP.ASS was an assessment system for speech outcomes for reporting a common protocol in six systems in the United Kingdom⁽⁴¹⁾. It has been continually revised and developed to be GOS.SP.ASS (98)⁽⁴²⁾ and the final version as the cleft audit-protocol for speech-augmented (CAPS-A)⁽³⁸⁾. The Scandcleft speech groups began developing a methodology for speech assessment in one of their annual meetings to devise and have an agreement on the first part of the methodology. The method for analysis is to be determined and was recently tested in

a pilot study for cross-linguistic studies⁽³⁹⁾. Establishing the consistency and uniformity for Thai Speech Parameters in Developing a Universal System using perceptual assessment in patients with cleft lip and palate was done based on speech sampling guidelines of universal parameters for reporting the speech outcomes in individuals with cleft palate⁽⁴³⁾ and can be used to compare with other universal parameters in 2011⁽⁴⁴⁾. Thai Speech Parameters for Patients with Cleft Palate in Universal Reporting System is currently implemented in standard test in Thailand.

The objective measurement for nasopharyngoscopy and videofluoroscopy

According to the standardization for a reporting system, an international working group established a system for quantifying, recording and describing movement of velum, lateral, posterior pharyngeal walls, as well as the size, shape, symmetry and location of velopharyngeal gaps on a relative scale (Golding-Kushner et al 1990). This scale can be applied to both nasopharyngoscopy and videofluoroscopy. The working group concluded that both nasopharyngoscopy and videofluoroscopy should be currently standardized based on a ratio which is subjective measurement. Therefore, challenging of finding the objective measurements for video nasopharyngoscopy and videofluoroscopy are very interesting and challenging.

Nasopharyngoscopy

Nasopharyngoscopy is a technique for direct velopharyngeal functional examination that allows observation of the velopharyngeal port during speech using an endoscope. Movements of the soft palate, posterior, lateral pharyngeal walls and patterns of velopharyngeal closure are seen. It is very common, and the majority of cleft teams use this procedure for the assessment of VPI. However, data obtained from nasopharyngoscopy depends on the position and angle of the tip of the endoscope and requires subjective interpretation⁽⁴⁵⁾. Khon Kaen University Cleft Research Center and Department of Otorhinolaryngology developed the objective measurement for nasopharyngoscopy by using program Motic Images Plus 2.0 with possible fixation distance of scope and target organ (velopharyngeal gap) and comparison to standard circle which had diameter 0.5 centimeter (Fig. 2). Areas of velopharyngeal gaps in each vowel and/s/ prolongation are calculated and converted to the objective values (Fig. 3).

Videofluoroscopy

Khon Kaen University Cleft Research Center and Department of Otorhinolaryngology with cooperation with radiology are developing the objective measurement for videofluoroscopy by designing the reference lines and standard reference (Fig. 4, 5).

Level 1: Distance from the right to left mandibular condyle level to the closest distance between right and left lateral pharyngeal wall level (a).

Left-Right: The closest distance from right lateral pharyngeal wall to left lateral pharyngeal wall (b).

Distance from the most anterior point of the hard palate to the most posterior point of the hard palate level to the closest distance between velum and posterior pharyngeal wall level (c).

Velum and pharyngeal wall: The closest distance between velum and posterior pharyngeal wall

level (d).

Velum length: The distance from the most posterior point of the hard palate to velum tip (e).



Fig. 2 Standard circle

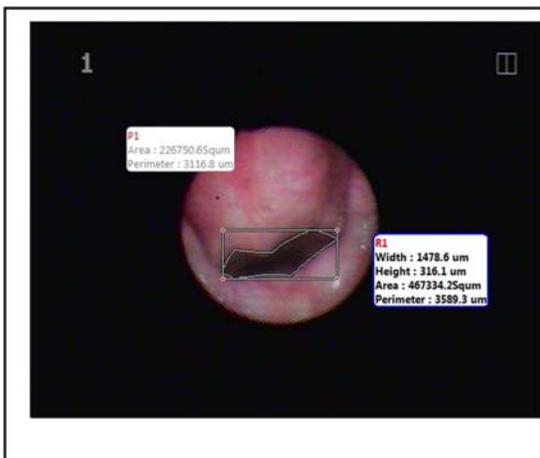
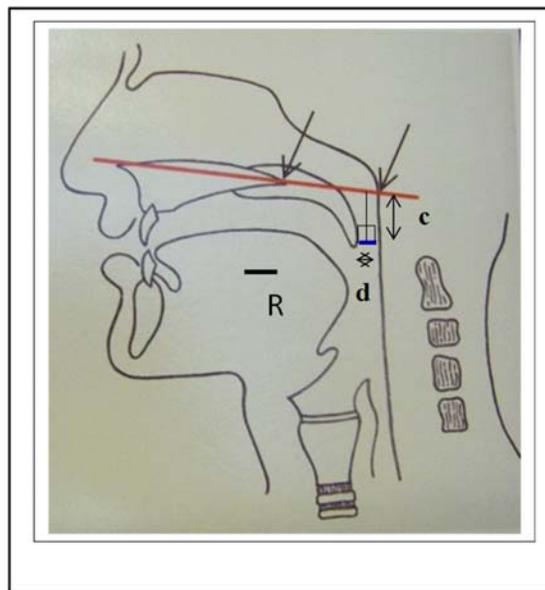


Fig. 3 Measurement of vowel /i:/



R: Reference line

Fig. 4 Lateral view measurement



R: Reference line

Fig. 5 Frontal view measurement

Standard reference line, a lead wire, (2.5 centimeters) is put near the targets areas. This reference is used for calculation patient's velopharyngeal distances. Establishing the objective measurements in Nasopharyngoscopy and Videofluoroscopy is challenging for SLPs and professionals who related to, *e.g.* Otorhinolaryngologist, plastic and maxillofacial surgeons. The further standard protocols would be required.

Conclusion

Speech and language services for cleft in Thailand, where lack of SLPs have been emphasized and have really only developed in the last few decades. Khon Kaen Community-Based Speech Therapy Model for people with Cleft Lip Cleft Palate and networking might prove to help children with cleft palate in long-term outcome. They are continuing to be applied in Chiengrai province and need to be extended to other areas of Thailand, in the near future. Two modalities of bottom-up and top-down development might be the best and suitable ways to solve problems of lacking speech services in Thailand or developing countries where as similar contexts.

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Potential conflicts of interest

None.

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การพัฒนาด้านการแก้ไขการพูดในบุคคลปากแหว่งเพดานโหว่ในประเทศไทย: การขาดแคลนบุคลากร

เบญจมาศ พระธานี

ภาวะปากแหว่งเพดานโหว่เป็นความผิดปกติแต่กำเนิดที่พบบมากที่สุดอันดับหนึ่ง และมีอุบัติการณ์สูงในประเทศไทย หลังรักษาด้วยการผ่าตัดแล้วเด็กเพดานโหว่ส่วนใหญ่ยังคงมีความผิดปกติแสดงให้เห็นในสังคมอยู่ เนื่องจากยังมีปัญหาทางการพูดและภาษาอยู่ การแก้ไขการพูดเป็นสิ่งจำเป็นที่ต้องทำตั้งแต่เนิ่นๆ และติดต่อกันยาวนาน จนถึงวัยรุ่นหรือวัยผู้ใหญ่ แต่การบำบัดรักษาด้วยการแก้ไขการพูดในเพดานโหว่ยังมีน้อยเพราะขาดแคลนนักแก้ไขการพูดในประเทศไทย การพัฒนาการแก้ไขปัญหา 2 ทางคือ ข้างล่างขึ้นข้างบน และข้างบนลงข้างล่าง ทำให้ได้รูปแบบในการให้บริการด้าน การฝึกพูดเด็กปากแหว่งเพดานโหว่ในชุมชน และเครือข่ายการฝึกพูด และการประเมินที่มาตรฐานทั้งการตรวจด้วยการฟังและด้วยวิธีการที่เป็นรูปธรรม ซึ่งวิธีการดังกล่าวเป็นวิธีการแก้ปัญหาที่ดีที่สุดและเหมาะสมกับประเทศไทย หรือประเทศที่กำลังพัฒนาที่มีบริบทคล้ายกัน
