Development of Improved Cleft lip/Palate Face Models for Teaching Parents of Children with Cleft Lip/Palate

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Objective: The objective of this study was to improve and evaluate cleft lip/palate face models to give support information to the parents whose children have cleft lip/palate.

Material and Method: Cleft lip/palate face models are made from a mold of about the same size as a child’s head using rubber, wood and silicone and can be separated into parts to match the severity of the disease. The authors surveyed two representative samples of new candidate parents whose children had cleft lip/palate (10 in a pilot study then 30 in the larger study) and five nurses (who had taken care of the cleft lip/palate patients). The questionnaire was designed by the researchers and it had a Cronbach’s reliability of \( a = 0.72 \).

Results: The result of the pilot evaluation revealed that the overall satisfaction score was high but the color of the models was not realistic so the satisfaction score was medium. After improvements of the colour and the post-surgical scar, the qualification and satisfaction scores were high (average 4.2).

Conclusion: The authors present an improved cleft lip/palate face models for educational use to parents of children with cleft lip/palate. The models had an overall good level of satisfaction. Using face models to give information helped parents to know and understand about the condition, treatments, caregiving and scheduling age-determined visits for treatments.

Keywords: Face model, Cleft lip, Cleft palate, Teaching

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Providing information, suggestions and advice to the parents of children with cleft lip/palate and craniofacial deformities is an aspect of holistic treatment given by the multi-disciplinary team to enable and encourage patients to deliver correct, proper and effective homecare\(^1-6\).

The study of ‘improvements to preparatory information and cleft lip/palate face models from Singapore’ for parents of children with cleft lip/palate was done using videos or an Episiotomy Trainer and hands-on models\(^7\). The material was of interest because parents can see and touch a model so as to understand the real situation\(^8\).

The Center of Cleft Lip/Palate and Craniofacial Deformities at Srinagarind Hospital provides treatment to the largest number of cleft lip/palate patients in Thailand\(^9\). To date, the information given to patients was in the form of photos plus print material which proved inadequate\(^10,11\). Thus, improvement of face models, for use as object lessons, was needed to instill greater knowledge and understanding. The parents could then become better informed about the disease and practical treatments so that they would be better able to properly and effectively take care of their cleft lip/palate child.

Objectives

1. To improve face models for informing parents about children with cleft lip/palate.
2. To study the result of using improved face models for providing information to parents whose children have cleft lip/palate.

Material and Method

This descriptive research was approved by
the Ethics Committee for Human Research, Khon Kaen University.

**Producing face models**

Cleft lip/palate face models are made from a mold of about the same size as a child’s head using rubber, wood and silicone. The face models can be separated into parts in order to match the severity of the disease and the progress of treatment (Fig. 1).

**Representative sample groups for evaluation**

The representative sample groups for evaluation comprised two groups.

Group 1 was a representative sample of nurses chosen from the ten duty nurses at Ward 3C, all of whom had more than one year of experience working with cleft lip/palate patients. In order to avoid bias, the five nurses were selected by drawing lots. Group 1 included ten parents.

Group 2 comprised 30 different parents (from Group 1) of patients with cleft lip/palate who received treatment at the Out-Patient Department (OPD) and Ward 3C of Srinagarind Hospital, Faculty of Medicine, Khon Kaen University.

**Data collection**

A questionnaire with ten questions, designed by the researchers, was used to collect information from ten parents and five nurses; after use of the face models to give information on children with cleft lip/palate. After the first evaluation, the researchers improved the face models to be more like a real child’s face.

The questionnaires inquired about the model’s life-likeness in terms of shape, size, color, disease condition, disease classification, and the satisfaction of using face models (advantages and convenience). A five-point Likert scale was used: Fully agree = 5, Mostly agree = 4, Medium agreement = 3, Little agreement = 2, Don’t agree = 1.

The information was analyzed using percentages, means, averages and standard deviations. The evaluation of using face models was categorized into three levels according to the average score:

- Score 0 - 1.66 Low satisfaction
- Score 1.67 - 3.32 Medium satisfaction
- Score 3.33 - 5.00 High satisfaction

**Results**

The initial ten parents whose children had cleft lip/palate and the five nurses agreed the colour of the models did not look real and the post-surgical scar was not clear (Table 1). Thus, the model colour was improved and the post-surgical scar around the mouth and palate made clearer. The new models were presented to 30 other parents for re-evaluation and the satisfaction score for the improved face models was high in all categories (mean, 4.20).

**Discussion**

The face models of cleft lip/palates are used to support giving information to the parents of children with cleft lip/palate. The objective was to create visual media that would enable visualization and improve understanding of the condition because some of the defects are not externally visible. A further goal is to help parents understand how the multidisciplinary team will try to correct the defect and how important it is to come to the service center according to the schedule given so that follow-up assessments and subsequent interventions are done in the appropriate order and time.

In the current study, we evaluated the satisfaction and usefulness of the face model from the perspective of parents and nurses: they were highly satisfied with the improved model.

The model maker was a Thai civil servant (viz., Govist W.), who also created medical education models for medical students at Srinagarind (university) Hospital, at the Faculty of Medicine, Khon Kaen University. The cost of our face models of cleft lip/palate was three times cheaper than the commercially available model; despite the fact that the commercial model had an unnatural color and overly large-sized head. The commercial model had a natural texture but...
### Table 1. Satisfaction result from pilot group’s impression of first round face models (parents = 10, nurses = 5).

<table>
<thead>
<tr>
<th>Model characteristic</th>
<th>Result from parents whose children have cleft lip/palate</th>
<th>Result from nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Realistic shape</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>2. Realistic size</td>
<td>Highest</td>
<td>High</td>
</tr>
<tr>
<td>3. Realistic colour</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>4. Realistic representation of the condition</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>5. Convenience</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>6. Realistic classification of severity</td>
<td>High</td>
<td>Medium-High</td>
</tr>
<tr>
<td>7. Useful for practising disease classification</td>
<td>High-Highest</td>
<td>High</td>
</tr>
<tr>
<td>8. Useful for future use</td>
<td>Highest</td>
<td>Highest</td>
</tr>
<tr>
<td>9. Usefulness of face models for giving information</td>
<td>Highest</td>
<td>Highest</td>
</tr>
<tr>
<td>10. Satisfaction using face models for giving information</td>
<td>Highest</td>
<td>Highest</td>
</tr>
</tbody>
</table>

### Table 2. The score of the satisfaction from the parents whose children had cleft lip/palate to using cleft lip/palate face models the second time (n = 30).

<table>
<thead>
<tr>
<th>The qualification of the models and the satisfaction to using the face models</th>
<th>Mean</th>
<th>The interpretation of the satisfaction result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Realistic shape</td>
<td>4.23</td>
<td>High</td>
</tr>
<tr>
<td>2. Realistic size</td>
<td>3.96</td>
<td>High</td>
</tr>
<tr>
<td>3. Realistic colour</td>
<td>3.56</td>
<td>High</td>
</tr>
<tr>
<td>4. Realistic representation of the condition</td>
<td>4.16</td>
<td>High</td>
</tr>
<tr>
<td>5. Convenience</td>
<td>4.33</td>
<td>High</td>
</tr>
<tr>
<td>6. Realistic classification of severity</td>
<td>4.03</td>
<td>High</td>
</tr>
<tr>
<td>7. Useful for practising disease classification</td>
<td>4.20</td>
<td>High</td>
</tr>
<tr>
<td>8. Useful for future use</td>
<td>4.50</td>
<td>High</td>
</tr>
<tr>
<td>9. Usefulness of face models for giving information</td>
<td>4.53</td>
<td>High</td>
</tr>
<tr>
<td>10. Satisfaction using face models for giving information</td>
<td>4.53</td>
<td>High</td>
</tr>
<tr>
<td>Mean</td>
<td>4.20</td>
<td>High</td>
</tr>
</tbody>
</table>

Some raters said that the suture lines were too difficult to see. The face model for cleft lip/palate made by our in-house staff is therefore highly useful and a cost-saver. Most importantly, the model has proven satisfactory for demonstrating the cleft lip/palate deformities to parents, thereby improving their understanding.

**Conclusion**

The evaluation of the overall satisfaction for using the cleft lip/palate face models for instructing parents whose children had cleft lip/palate was satisfactory, i.e., between high to the highest level. Initially, there were some concerns regarding the realistic aspects of the color of the model and the clarity of the post-surgical scar; thus, improvements were made and a re-evaluation of satisfaction done. The evaluation after improvements were made revealed that the representative samples had a high level of satisfaction. Using face models provided affected parents with knowledge and understanding regarding the disease, its severity and scheduling treatments. Parents were then able to take better care of their children, including bringing the children for treatments on time according to their age.

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การพัฒนาหุ่นใบหน้าจำลองสำหรับข้อมูลผู้ปกครองเด็กที่มีภาวะปากแหว่ง เพนทันโหว

สุธีรา ประดับวงษ์, วันนาพงษ์, ใบวงษ์ พันธุมทรัพย์, บวรศิลป์ เชาว์ชิน

วัตถุประสงค์: การศึกษานี้มีวัตถุประสงค์เพื่อพัฒนาและประเมินหุ่นใบหน้าจำลองเพื่อประกอบการให้ข้อมูลผู้ปกครองเด็กที่มีภาวะปากแหว่ง เพนทันโหว

วัสดุและวิธีการ: หุ่นใบหน้าจำลองได้ถูกทำขึ้นในขนาดเดียวกับศีรษะเด็ก โดยใช้วัสดุที่ทำด้วยยางไม้และซิลิโคน สามารถแยกเป็นส่วนๆได้เพื่อให้เหมาะสมกับความรุนแรงของโรค โดยจัดการประเมินผลใน 2 กลุ่มตัวอย่าง คือผู้ปกครองเด็กที่มีภาวะปากแหว่ง เพนทันโหว 10 ราย และศูนย์การผ่าตัดเด็ก 30 ราย และกลุ่มพยาบาลประจำการที่มีประสบการณ์ในการดูแลเด็กที่มีภาวะปากแหว่ง เพนทันโหว 5 คน โดยใช้แบบประเมินที่ออกแบบโดยผู้นิพนธ์และผ่านการทดสอบความน่าเชื่อถือของเครื่องวัด Cronbach's alpha มีค่า a = 0.72

ผลการศึกษา: ผลการประเมินครั้งที่ 1 โดยรวมมีความพึงพอใจระดับมากแต่มีข้อบกพร่องในส่วนของความเหมือนจริงของสีหุ่นที่มีผลประเมินความพึงพอใจอยู่ระดับปานกลาง ผลจากการประเมินครั้งที่ 1 ทำให้มีการปรับแก้และผลิตใหม่หุ่นในกลุ่มผู้ป่วย หลังจากการปรับแก้ผลการประเมินคุณสมบัติของหุ่นและความพึงพอใจอยู่ในระดับเพียงพอได้คะแนนเฉลี่ย 4.2 คะแนน

สรุป: ผู้นิพนธ์เสนอการพัฒนาหุ่นใบหน้าจำลองสำหรับข้อมูลผู้ปกครองเด็กที่มีภาวะปากแหว่ง เพนทันโหว เพื่อประกอบการให้ข้อมูลแก่ผู้ปกครอง ผลการประเมินความพึงพอใจโดยรวมอยู่ในเกณฑ์ดี การใช้หุ่นใบหน้าจำลองประกอบการให้ข้อมูลมีส่วนส่งเสริมให้ผู้ปกครองมีความดูดความเข้าใจเกี่ยวกับการระบาดโรคและแนวทางการรักษา สามารถให้การดูแลและนำพาผู้ป่วยให้เข้ารับการรักษาตามช่วงอายุได้อย่างเหมาะสม