

Evaluation of the Comprehensive Care Program for Patients with Cleft Lip-Palate and Craniofacial Deformities

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Objective: To evaluate the program: the comprehensive care for patients with cleft lip-palate [CLP] and craniofacial deformities [CFD] treatment program at Tawanchai Center, Srinagarind Hospital.

Materials and Methods: This is the descriptive study by used CIPP model as the essential principle. The evaluation was based on the program's context, input, process, and product. The subjects of evaluation were documents, participants, and the program committee. The tools were a questionnaire and an evaluation form. Means and standard deviations were utilized in the data analysis.

Results: There were 144 patients participated in the program with the majority being male (99, 68.75%). The most presented condition was RCLP (56, 38.88%). The evaluation results of the program's context, factors of input, process, and product showed that overall, all four aspects had a high level of suitability ($x \pm SD = 4.22 \pm 0.64$; $x \pm SD = 4.14 \pm 0.36$; $x \pm SD = 3.93 \pm 0.71$ and $x \pm SD = 4.45 \pm 0.66$ respectively). Satisfaction was expressed in their outcome of the following aspects: quality of life, image, speech and communications, teeth alignments and occlusion, obtaining the pre-surgery information, and the treatment protocol ($x \pm SD = 4.22 \pm 0.78$; $x \pm SD = 4.00 \pm 0.66$; $x \pm SD = 4.11 \pm 0.73$; $x \pm SD = 3.55 \pm 0.83$; $x \pm SD = 4.22 \pm 0.62$; $x \pm SD = 4.44 \pm 0.49$, respectively). The clinical outcomes revealed that there were cheiloplasty in 3 to 6 months old, palatoplasty in 10 to 18 months old; in obtaining the pre-surgery information and follow-up with multidisciplinary team they showed 94.95, 96.96, 84, and 92.31%, respectively.

Conclusion: The evaluation of this program responded to the objective of the program in the comprehensive care covering five aspects. It concretely benefited for the patients and families, therefore it should be continued to cover all age ranges and extended to the other specific care centers.

Keywords: Project evaluation, CIPP model, The comprehensive care for patients with cleft lip-palate and craniofacial deformities program, Tawanchai center, Srinagarind Hospital

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The highest of CLP incidence in Thailand is found in the Northeast, where the rate of prevalence is 2.49 per 1,000 newborns⁽¹⁾. In the 4 provinces under Thailand's National Health Security Office 7 [NHSO 7], the rate of prevalence is 2 per 1,000 newborns⁽²⁾. Conditions caused by CLP impact the social, psychological, and spiritual well-being of the patients and families. For example, the anxiety about

taking care of a child or the child's image⁽³⁾, inadequate milk and nutrition intake, frequent illness, frequent absence from school, low self-esteem, poor quality of life, and economic problems⁽⁴⁾. The treatment care for CLP patients in Srinagarind Hospital has multidisciplinary team aims to achieve knowledge exchange, education management, research, training, academic text production, and cooperation across multiple disciplines and institutions at both national and international levels⁽⁵⁾. Cooperation facilitates ongoing treatment at different age ranges, from the patient's existence as a fetus until adulthood. All actions are conducted under the sole approach and

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goal of leading the patient to safety, with regularly functioning organs, satisfaction with the treatment, and a good quality of life⁽⁶⁾. The nurse coordinators were the case managers in complex cases and supported in organizing and administering to achieve the program's goals.

Tawanchai Center is a holistic center for specific patients, comprehensive care of patients with CLP. Community Based Rehabilitation [CBR] as defined by the WHO (2010)⁽⁷⁾ has been employed in the treatment process for patients with CLP for 10 years. It covers 5 aspects: Health, Education, Social, Livelihood, and Empowerment, to enable the patients to have a better quality of life and to live a valuable life in society.

It was revealed in the previous surveys that not all of the patients could access the services. The newborns were underweight and lacked nutrition and milk. Their health conditions were behind the proper state of "Rule of Ten" which recommends that the newborns who are 10 pounds (4.5 kg or more), 10 weeks (3 months or more) and 10 hemoglobin indicators⁽²⁾ should have the first surgery. There were some patients who had surgery from the other hospital at the age of 5 years old coming to the center with the fistula, speech problems and hearing loss⁽⁸⁾, furthermore, otitis media, dental carries and malocclusion⁽⁹⁾.

To solve these problems integrated, Tawanchai Center has implemented the comprehensive care for patients with CLP and CFD treatment program into the services aiming to integrate and enhance the center's potentials of Tawanchai Center, Srinagarind Hospital in managing the comprehensive care for patients with CLP and CFD in the northeast region of Thailand⁽¹⁰⁾. The major focuses are on the accessibility of the service, tracking of old patients, transferring, health promotion, multidisciplinary care through every age range, and rehabilitation. The nurses are key components in the case managing, protocol caring in the critical age range, evaluation, advisory, treatment planning, multidisciplinary care cooperation, and providing feedback for the further improvement. However, there were some patients who missed certain treatments because their age, for example: speech assessment, ear examination, and hearing assessment prior to the surgery. These caused the delay of surgery because the patients must receive those diagnoses to assure the doctor's decision in conducting the myringotomy operation and CLP surgery at the same time. Moreover, the cheiloplasty in the 3 to 6 months old and palatoplasty in the 10 to 18 months old, and the advisory from the nurse were at a lower rate than

the expected goals. These are the essential duties of the nurse managers which can be seen as shown Figure 1.

Therefore, the improvement of the service system was needed and the development of the system was implemented according to the determined plans. The ultimate goals of the service system administration were to cover the 5 aspects concretely. However, throughout the 5 years of the program operation, there had been no evaluations conducted, and the results of the program had never been officially assessed. The researchers wanted to investigate the effectiveness of the program by using the process of evaluation with the standardized and reliable measures⁽¹¹⁾ to find out whether the policy, planning, and program achieved the determined objectives and goals.

CIPP (context-input-procedure-product) model was particularly adopted to create the evaluation for the program because it is widely used in critical assessment which reveals the quality of the program's tasks⁽¹²⁾. The contextual evaluation was done to examine the needs and the rational principles of the program. The inputs evaluation was done to examine the possibility, properness and resource adequacy of the program. The process evaluation was done to examine the defects of the operation in order to provide the feedback for the program's solutions and improvement. The product evaluation was done to systematically to compare the outcomes to the objectives of the program. The concept of CIPP and program evaluation method Figure 2.

Objective

To evaluate the comprehensive care for patients with CLP and CFD treatment program at Tawanchai Center, Srinagarind Hospital.

Materials and Methods

This is the descriptive study by using CIPP model as an evaluation method as the essential principle as the followings:

Population

Population including:

1) The participants were 144 patients and their families. They were chosen by the purposive sampling method owing to the homogenous characteristic of the CLP patients. The age ranges were classified into 2 groups; 4 to 7 years old (102 cases) and 13 to 19 years old (42 cases).

2) The comprehensive care team 10 persons.

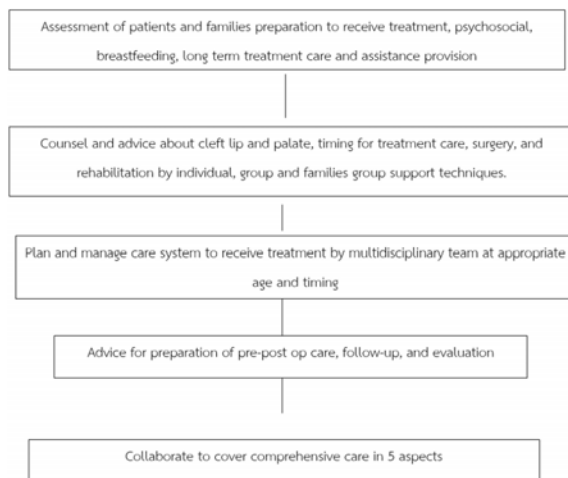


Figure 1. The nurse's role in the comprehensive care program.

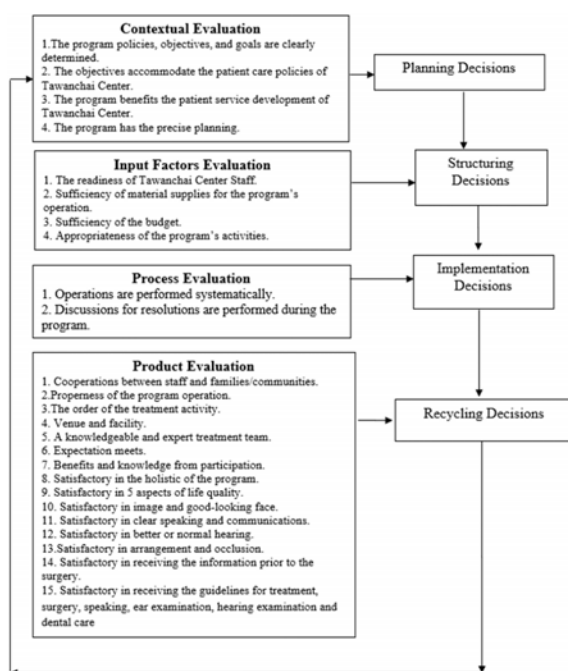


Figure 2. The concept of CIPP and program evaluation method.

Information collecting

Step 1 Context evaluation:

It aimed to evaluate the properness of the program and focused on: The correlations of the program's objectives and the policy of Tawanchai Center, the patients and their families' needs and the problems conditions of the patients and their families.

Step 2 Input evaluations:

It aimed to evaluate the effectiveness of manager, availability of the multidisciplinary team and Tawanchai Center staffs, adequateness in materials and budget, and properness of the care activities.

Step 3 Process evaluations:

It aimed to evaluate the effectiveness of the program process, including the steps of physical examination and the operation, the treatment activity consisted of the assessments of health, education, social, livelihood and empowerment, and the needs of home, school and occupations.

Step 4 Product evaluations: It aimed to evaluate the achievement of the program after completion after the project had been operating for 5 years.

Data collecting: by using questionnaire and interview participations.

1) A questionnaire for the program evaluation with a 5-scale rating: the most suitable, very suitable, fairly suitable, less suitable, least suitable. It consisted of 12 questions on context, input factors, and process aspects of the program, the program operation with 8 questions and the outcome after the implementation with 15 questions.

2) The interview form for the participants with 5 questions.

The questionnaire consisted of 3 questionnaires developed by Puttacahrd Limlamai⁽¹²⁾. (Cronbach's alpha = 0.89): the program evaluation developed by 5 experts (Cronbach's alpha = 0.92) and the evaluation developed by the multidisciplinary team to cover 4 dimensions; aesthetic, function, psychosocial and development (Cronbach's alpha = 0.79).

The program evaluation was conducted by setting the quality of life development camp for 142 patients and families for 2 days in May 2017.

Data analysis

Data were analyzed for percentages, means, and standard deviations. This research obtained the certified from KKU Ethical Human Research. (HE601486)

Results

1) General information

The study revealed that of the participants, there were 102 CLP patients 4 to 7 years old (70.83%) and 42 CLP patients 13-19 years old (29.17%), with the majority being male (99, or 68.75%). In 56 of the cases

(38.88%), the patients had RCLP, as shown in Table 1.

2) Context evaluation

The results of the study as shown in Table 2. The findings also showed that the program was suitable for patients' problems and needs. It was a center for coordination between patients and the multidisciplinary team. The treatment took a long period to complete, and the patients and their families were the vital components. The complete care covered physical, mental, social, and economic aspects of the patients' lives. The service accessibility and systematic registration were the main concerns. Furthermore, the 5 aspects were entirely taken into account as mentioned previously.

3) Input factors evaluation

The results showed that the inputs into the comprehensive care for CLP and CFD Patients Treatment Program were rated as shown in Table 3.

4) Process evaluation

The results showed that the process of the comprehensive care for patients with CLP and CFD Treatment Program was rated as shown in Table 4.

5) Product evaluation

The product evaluation reported satisfaction as shown in Table 5.

The results of treatment after the implementation of the program as shown in Table 6.

The results of clinical treatment as shown in Table 7.

Discussion

General information

The age ranges of the patients in the program are 4 to 7 years old. These age ranges are suitable for

adjusting to socialization, an educational environment, a livelihood, and for empowerment. However, it would be great beneficial if the program were made available for patients in the newborn to 5-year-old range group because this age range is in high need of close treatment, including monitoring for proper milk and nutrition intakes, conducting surgeries and social and psychological care, and preparing for socialization⁽¹³⁾. Parents and families must be empowered and provided with optimal support in raising young children to be ready for living with others in the future.

In addition, 13 to 19-year-old patients must be evaluated on their voice and language communication capacities, as well as on orthodontic and bone graft health. Therefore, to reach a higher level of achievement, the program should be conducted to provide these patients with empowerment and support in the areas of education, socialization, and livelihood as well⁽⁶⁾.

Table 1. The percentages of patients; age ranges and illness conditions

Information	Number	Percentage
4 to 7 years old CLP patients	102	70.83
13 to 19 years old CLP patients	42	29.17
Total	144	100
Sex		
Male	99	68.75
Female	45	31.25
Diagnosis		
RCLP	56	38.88
LCLP	43	29.86
BCLP	32	22.22
CFD	6	4.16
Cleft Palate	5	3.47
Cleft Lip	2	1.41
Total	144	100

Table 2. Result of context evaluation

Items	$\bar{x} \pm SD$	95% CI	Interpretation
1) The program policies, objectives, and goals are clearly determined	4.14±0.64	3.68 to 4.60	High
2) The objectives accommodate the patient care policies of Tawanchai Center	4.58±0.49	4.23 to 4.93	Highest
3) The program benefits the patient service development of Tawanchai Center	4.29±0.70	3.79 to 4.79	High
4) The program has the precise planning	3.86±0.64	3.40 to 4.32	High
Overall	4.22±0.62	3.78 to 4.66	High

The range of satisfaction scales: 4.51 to 5.00 = very good; 3.51 to 4.50 = good; 2.51 to 3.50 = fair; 1.51 to 2.50 = poor; 1.00 to 1.50 = very poor

Context evaluation

The objectives of the program correlate with the program's policy. This finding truly honors Her Royal Highness Princess Sirindhorn on her 60th birthday in 2015 and on her visit on the 50th Anniversary of Khon Kaen University on 23 February 2010. Tawanchai Center has since operated the Comprehensive Cleft Care, which has been continuously run for almost 10 years with cooperation between the Faculty of Medicine and the Faculty of Dentistry. The care accommodates

the WHO Community-Based Rehabilitation [CBR] Guidelines (2010), which covers 5 aspects: Health, Education, Social life, Livelihood, and Empowerment⁽⁷⁾. It has unequivocally resulted in a more valuable life for the patients. The program should be continued consistently in the coming years. Tawanchai Center should keep the program as its main policy.

Input factors

The evaluation shows that the program is

Table 3. Results of Input Evaluation

Items	$\bar{x} \pm SD$	95% CI	Interpretation
1) The readiness of Tawanchai Center staff	3.86±0.64	3.40 to 4.32	High
2) Sufficiency of material supplies for the program's operation	4.71±0.45	4.39 to 5.03	Highest
3) Sufficiency of the budget	4.14±0.35	3.89 to 4.39	High
4) Appropriateness of the program's activities	3.86±0.64	3.40 to 4.32	High
Overall	4.14±0.36	3.88 to 4.40	High

The range of satisfaction scales: 4.51 to 5.00 = very good; 3.51 to 4.50 = good; 2.51 to 3.50 = fair; 1.51 to 2.50 = poor; 1.00 to 1.50 = very poor

Table 4. Means and standard deviations for process evaluation

Items	$\bar{x} \pm SD$	95% CI	Interpretation
1) Operations are performed systematically	4.00±0.53	3.62 to 4.38	High
2) Discussions for resolutions are performed during the program	3.71±1.03	2.97 to 4.45	High
3) The program operations are examined and monitored	4.00±0.76	3.46 to 4.54	High
4) The program operations are systematically evaluated	4.00±0.53	3.62 to 4.38	High
Overall	3.93±0.71	3.42 to 4.44	High

The range of satisfaction scales: 4.51 to 5.00 = very good; 3.51 to 4.50 = good; 2.51 to 3.50 = fair; 1.51 to 2.50 = poor; 1.00 to 1.50 = very poor

Table 5. Results of program evaluation

Items	$\bar{x} \pm SD$	95% CI	Interpretation
1) Cooperations between staff and families/communities	4.34±0.65	4.23 to 4.45	High
2) Properness of the program operation	4.11±0.80	3.98 to 4.24	High
3) The order of the treatment activity	4.33±0.66	4.22 to 4.44	High
4) Venue and facility	4.63±0.57	4.54 to 4.72	Highest
5) A knowledgeable and expert treatment team	4.52±0.58	4.42 to 4.61	Highest
6) Expectation meets	4.35±0.73	4.23 to 4.47	High
7) Benefits and knowledge from participation	4.57±0.60	4.47 to 4.67	Highest
8) Satisfactory in the holistic of the program	4.59±0.59	4.49 to 4.69	Highest
Overall	4.43±1.29	4.22 to 4.64	High

The range of satisfaction scales: 4.51 to 5.00 = very good; 3.51 to 4.50 = good; 2.51 to 3.50 = fair; 1.51 to 2.50 = poor; 1.00 to 1.50 = very poor

Table 6. Results of treatment after implementation of the program

Items	$\bar{x} \pm SD$	95% CI	Interpretation
1) Satisfactory in 5 aspects of life quality	4.22±0.78	4.09 to 4.35	High
2) Satisfactory in image and good-looking face	4.00±0.66	3.89 to 4.11	High
3) Satisfactory in clear speaking and communications	4.11±0.73	3.99 to 4.23	High
4) Satisfactory in better or normal hearing	4.55±0.49	4.47 to 4.63	Highest
5) Satisfactory in arrangement and occlusion	3.55±0.83	3.41 to 3.69	High
6) Satisfactory in receiving the information prior to the surgery	4.22±0.62	4.12 to 4.32	High
7) Satisfactory in receiving the guidelines for treatment, surgery, speaking, ear examination	4.44±0.49	4.36 to 4.52	High
Overall	4.24±0.59	4.14-4.34	High

The range of satisfaction scales: 4.51 to 5.00 = very good; 3.51 to 4.50 = good; 2.51 to 3.50 = fair; 1.51 to 2.50 = poor; 1.00 to 1.50 = very poor

Table 7. The expectation and percentage of the results in treatment after the implementation of the program

Items	Expectations	Results
1) Percentage of patients who received the surgery at 3 to 6 months age ranges	100	94.95
2) Percentage of the required weight (10 pounds)	100	93.33
3) Percentage of patients who received the surgery at 10 to 18 months age ranges	100	96.96
4) Percentage of the guardians who received the information prior to the surgery	100	84.00
5) Percentage of having follow-ups with the multidisciplinary	100	92.31
6) Percentage of the admission period after surgery that not more than 3 days	>90	91.66
7) Percentage of the admission period after surgery that not more than 4 days	>90	89.50
8) Percentage of the satisfactory of the patients and families	>90	91.20

suitable and has sufficient resources. The organization policy agrees to support the annual budget for the program constantly. Moreover, support personnel are from multidisciplinary teams from the Faculty of Medicine, the Faculty of Dentistry, and Tawanchai Center, as well as other internal and external units. Material and technological support is also available from internal and external units. In addition, committee meetings can be conducted to delegate and allocate personnel for annual programming. Finally, a good vision and attitude in teamwork and cooperation⁽¹⁴⁾ have led to the program's achievements in having the greatest benefit for the patients, family, and community.

Process evaluation

The evaluation shows that the program is accessible and covers all age ranges. The program provides activities covering the 5 aspects of CBR for patients, friends, parents, teachers, public health volunteers, healthcare personnel, and relevant communities. Knowledge transfer has mainly focused

on the different treatments for different age ranges, child and adolescent understanding, and family planning. Recreational activities were introduced to encourage good relationships among patients in the same age groups. All in all, these reflect that Tawanchai Center focuses on the activities that cover the 5 aspects of CBR. For example, the Volunteer Empowerment of Tawanchai Center Program aims to encourage the participants to help themselves and their families, establishes a good example in community care and creates the complete care for CLP patients⁽¹³⁾. The program should be continued because it is different from the previous operations which focused on physical treatment. Implementation of WHO concepts of complete care⁽⁷⁾ provides the patients and families with better treatment results, satisfaction, and better life quality.

Product

The evaluation shows that the complete service system for CLP covers the 5 aspects of CBR.

In physical aspect, it is clear that the service is accessible and systematic. The patients are taken care of and receive surgery and rehabilitation according to their age protocol under the supervision of the nurse manager in assessment, consulting, planning, transferring, recording, and evaluation as well as coordinating with the multidisciplinary team. There is an accessible coordination center to support the patients and families in education, social, living, and empowering. The purposes of the program are to help CLP patients to have education and occupations so that they can live in the society with values like normal people.

Satisfaction outcomes

The evaluation shows the high satisfaction level of the quality of life, image, clear speech and communication, alignment and occlusion, information prior to surgery and treatment protocol. The highest satisfaction is for hearing. The findings indicate that the team work focuses on the same purposes, which are providing the safety to the patients, making the patients satisfied with the treatment results and their organs can function well like normal people's, and helping the patients to live with values in society.

Clinical outcomes

The evaluation shows that a surgery in the protocol age ranges performs lower than the expectation due to several factors. One of these factors is the severity of diseases that need a long preparation period before surgery; for example, bone graft in bilateral CLP and respiratory infection can delay the surgery dates⁽⁶⁾. The other factor that obstructs the surgery is the underweight condition. The medical team suggests milk feeding and provides more information about respiratory infection prevention. These are the guidelines for future improvement.

Conclusion

The evaluation of the program accommodates the objectives of the research in terms of the development of the comprehensive care that covers 5 aspects. It brings benefits to patients, therefore, the program should be continued to cover all age ranges and extended to the other specific care centers.

What is already known on this topic?

The comprehensive care for patients with CLP is the cooperated care service by the multidisciplinary team including every specialist and focuses on the

physical treatment. This program developed the care system that covers 5 aspects to take care and concretely evaluated.

What this study adds?

Knowledge and new methods of working that implemented the Community Based Rehabilitation of WHO 2010⁽⁷⁾ in treatment for 5 aspects. The nurses were key managers who coordinated and administrated the system that helped the patients with CLP to complete the entire treatment, surgery, rehabilitation according to the protocol, and their age range. In addition, CIPP Model was used as the evaluation principle, and it examined the 4 aspects clearly, therefore, this program should be continued and extended to the other specific care centers.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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