

Continuous Improving the Key Performance Indicator of the Quality of Care for Patients with Cleft Lip/Palate in Out-Patients Surgical Unit and Tawanchai Center Srinagarind Hospital

Sumalee Pongpagatip MA¹, Suteera Pradubwong MSN¹, Bowornsilp Chowchuen MD, MBA²

¹ Division of Nursing, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

² Division of Plastic Surgery, Department of Surgery, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

Background: Cleft lip and palate deformities [CLP] in the Northeastern region have the highest incidence in Thailand. For these birth defects, long-term critical care and treatment are needed, which, in order to carry out effective evaluations, requires taking part in the caring process. According to the continuous improvement of the Key Performance Indicators [KPI] of the quality of care for patients with CLP at Srinagarind Hospital, this subsequent research study has established KPIs for the Out-Patient Surgical Unit and the Tawanchai Center.

Objective: To develop the KPIs for the Out-Patient Surgical Unit and the Tawanchai Center to improve the quality of care, to provide comprehensive care, and to develop information systems which will automatically analyze data and supply updated information.

Materials and Methods: The KPIs for nursing service quality in the Nursing Division called “The Out-Patients Surgical Unit’s and Tawanchai Center’s KPIs”, were modified in order to become compatible with 13 issues involved in cleft care management. Therefore, the 9 CLT KPIs of quality of care cannot directly indicate the situation of the patients. Afterwards, 36 outpatients were select to answer both questionnaires. The study was conducted for 8 months (January to August 2016). The descriptive methods, used in analyzing the data, were percentages.

Results: The 9 CLT KPIs for the quality of patient care and services were established, and there were 7 issues that were able to achieve the target. For the Out-Patient Surgical Unit’s and the Tawanchai Center’s KPIs, there were 13 issues in total, and the targets were achieved for 11 issues. The developed information system is able to automatically record, process, and report the data in percentages.

Conclusion: The development KPIs for patients with CLP led to a total of 22 issues. The developed information system is able to record, process and report automatically the data in percentages.

Keywords: Key performance indicator, Quality of care, Cleft lip/palate, Srinagarind Hospital

J Med Assoc Thai 2018; 101 (Suppl. 5): S25-S31

Full text. e-Journal: <http://www.jmatonline.com>

Incidences of CLP in Northeastern Thailand are high (2.49/1,000 newborns)⁽¹⁾. The treatment, administered by a competent multidisciplinary team,

Correspondence to:

Chowchuen B, Division of Plastic Surgery, Department of Surgery, Faculty of Medicine, Khon Kaen University 40002, Thailand.

Phone: +66-43-363123

E-mail: bowcho@kku.ac.th

should, in order to achieve satisfactory results for patients and their families, give them access to crucial, timely, and urgently needed long-term management starting from the prenatal period until 19 years of age^(2,3). At Srinagarind Hospital, surgical care for 200 to 250 cases of CLP is provided each year. Out-patient surgical services also provide long-term, follow-up services for them, such as child development, nutrition, audiograms and hearing tests, and speech-language training for

How to cite this article: Pongpagatip S, Pradubwong S, Chowchuen B. Continuous Improving the Key Performance Indicator of the Quality of Care for Patients with Cleft Lip/Palate in Out-Patients Surgical Unit and Tawanchai Center Srinagarind Hospital. J Med Assoc Thai 2018;101;Suppl. 5: S25-S31.

400 to 500 cases per year and for more than 1,000 visits/year. The cleft clinic provides occlusion assessment and dental check-ups, once a month, for which there are 250 to 300 cases per year⁽⁴⁾.

Nurses, who are a part of multi-disciplinary team, play a crucial role in providing care for patients with CLP at the Out-Patient Surgical Unit and at Tawanchai Center. The care covers both the physical and psychological aspects by accomplishing the following: 1) assessing the conditions and the communicating the information about the initial disorder by the multi-disciplinary team, 2) providing guidance about the hospital's areas and its services, 3) answering all questions from a state of service-mindedness, 4) facilitating coordination to the patients and their family members with equality and respect, and 5) allowing the patients and families to give feedback and to express their opinions about the nursing care. Moreover, nurses should carry out the following practices: 1) prepare clean areas to provide services with sufficient lighting and adequate air flow, 2) prepare and manage the patients prior to surgery, 3) make follow-up appointments, 4) offer channels for inquiries from the administrative officers when required by the patients, 5) handle and distribute practice/care guidebooks or manuals for patients with CLP, and 6) continually improve the system of service to achieve the patients/caregivers highest degree of satisfaction in regard to services rendered in the Out-Patient Surgical Unit and in Tawanchai Center. As a result, the patients and their families will receive quality care from Srinagarind Hospital⁽³⁾.

From the development and monitoring of the 9 CLT KPI of the quality of care for patients with CLP, it was determined at that time that the findings had only revealed 3 issues which had achieved the goal targets: 1) the rating of patients/caregivers who had received continuous follow-ups with an outcome of 92.06% (target goal over 90%); 2) the rating of patient's/caregiver's level of satisfaction in acquiring information from the officers with an outcome of 89.69% (target goal over 85%); and 3) rating of patient's/caregiver's level of satisfaction with respect to the services rendered by the officers at the Out-Patient Surgical Examination Room and at the Tawanchai Center, with an outcome of 92.11% (target goal over 90%).

However, there were two issues of KPIs which had failed to achieve their targets. These were ratings from patients who had received Cheiloplasty at 3 to 6 months and patients who had received Palatoplasty at 10 to 18 months. To explain these unachieved goals,

the target patients must merely have had a decrease in cleft lip/palate and must have undergone surgery only at Srinagarind Hospital. For those who had a syndrome that might have caused a late operation, it was impossible to analyze the resulting causes and problems causing late operations if the patients had received their treatment at others hospitals. Therefore, these reasons led to failure in the outcomes.

In order to achieve goals in all aspects of services, we established 13 KPIs for the Out-Patient Surgical Unit and the Tawanchai Center which focused on the caregiver's opinions towards the quality of care, and which were based on the Nursing Division's KPIs at Srinagarind Hospital⁽⁵⁾. The Nursing Division's existing KPIs are generally used to assess the caregiver's level of satisfaction about nursing services, and are used as the benchmark criteria to compare with other University hospitals and care centers. For this present study the researchers have established additional KPIs, which consisted of the following: 1) the convenience of the services provided, 2) the provision of information about places, service processes, and coordination services; 3) the officers' immediate responses and their willingness to serve; 4) evidence of services including the general atmosphere, the environment, and the facilities; and 5) the customers' trust in the quality of the treatment received which consisted of: a) the officers' potential to provide services, b) his/her ability to deliver constant explanations about the hospital setting, c) his/her ability to explain the illnesses and medical treatments to be given; and d) the officers' ability to be respectful to the patients and offer them equal treatment. The collected information will be applied to improve the quality of nursing services in future.

According to the 9 CLT KPIs and the quality of care for CLP patients, the research revealed that the database had not been shown in real time. Since the computerized system had taken time to process the results after the data had been saved, the process was deemed as "inconvenient" and "too complicated" for utilization. In consequence, to successfully make compatible and up-to-date KPIs of quality care, the researchers have developed an information system which can automatically update and analyze data, as well as can report the results in real-time. This has led to the establishment of the 13 KPIs for the Out-Patient Surgical Unit and the Tawanchai Center. Furthermore, these improvements to the information system have yielded the creation of a more user-friendly version.

Objective

To develop the KPIs for the Out-Patient Surgical Unit and the Tawanchai Center with respect to improving the quality of care, to offering comprehensive care and to developing an information system which has the ability to automatically analyze and update the data.

Materials and Methods

This descriptive study was conducted over a one-year period (January – December 2016) and was carried out in accordance with the following six steps: 1) The 9 CLT KPI of quality care and information from this study were analyzed; 2) The 13 KPIs of the Out-Patient Surgical Unit and the Tawanchai Center, which focused upon the caregivers' levels of satisfaction and opinions toward nursing service quality, were established; 3) The researchers designed the collection method for the service KPIs including questionnaires which sought to discover the caregivers' levels of satisfaction of nursing service quality. Moreover, it was decided that 15 minutes per patient per interview was the least amount of time that should be spent for the interviews; 4) The information system was developed to automatically process and update the data after it has been saved and to create a real-time report. This process was carried out during the three month period from January to March 2016; 5) The results were collected from the previous 9 CLT KPI, which were related to the quality of care, and also from the 13 new KPIs of the Out-Patient Surgical Unit and the Tawanchai Center which were concerned with the caregivers' levels of satisfaction; 6) All of the results were inputted into the database for 4 months (May to August 2016), and then the descriptive statistics presented the data in percentages.

Ethical approval

This present study was approved by the Human Research Ethics Committee of Khon Kaen University (HE561321).

Results

Of the 36 patients and caregivers, who came to follow-up at the Out-Patient Surgical Unit and who answered questions regarding the 13 issues of the Out-Patient Surgical Unit's and Tawanchai Center's KPIs, it was noted that the majority patients were between the ages of 1 to 5 years old (83.33%). The patients with CLP were found to be the majority (66.67%). Most of the caregivers were mothers (66.67%), who were

between the ages of 26 to 35 years old and who accounted for 50 percent of the total. It was found that the majority of caregivers were females (77.78%).

Regarding the assessment of the 13 issues of the Out-Patient Surgical Unit's and the Tawanchai Center's KPIs, it was revealed that Srinagarind Hospital had merely focused upon those who had undergone cleft surgery at Srinagarind Hospital. The data that was recorded during that 4-month period indicated the following: 1) the rate of patients, who had undergone cleft surgery at Srinagarind Hospital, was 100%; 2) Those, who had received Cheiloplasty at 3 to 6 months, were at 100%; 3) Those, who had received Palatoplasty at 10 to 18 months, were at 100%; 4) Those, who had understood the treatment plan of the medical team, were at 88.89%; 5) The patients/caregivers, who had received pre-operative care, were at 97.23%; 6) Those, who had had a continuous follow-up, were at 94.45%; 7) Their level of satisfaction in acquiring information from the care team had been at 94.45%; 8) Those, receiving the guidelines and an appointment calendar, had been at 100%; 9) The overall level of satisfaction that the patients/families had expressed toward the services rendered by the care team at the Out-patient Surgical Unit and the Tawanchai Center was found to be at 100% (Table 1).

Regarding the aspects of the caregivers' levels of satisfaction and their opinions toward quality of nursing service, this study showed the following rates: 1) The Nursing Care team's constant explanation about diseases, illnesses, and medical treatments had been at 100.00%; 2) The Nursing Care team's consistent willingness to give assistance had been at 94.44%; 3) The Nursing Care team's immediate response when they were needed had been at 93.68%; 4) Receiving guidance for self-care or child care had been at 100.00%; 5) The Nursing Care team's potential in giving service had been at 100.00%; 6) The provision of coordination services had been at 97.83%; 7) The provision of areas and the services of processing information had been at 97.82%. Furthermore, in regard to the following: 8) respectfulness and equality of treatment in the officers' services; 9) opportunities to express feelings and opinions to the nursing service; 10) the level of cleanliness, sufficient lighting, adequate air flow, and no odors in the service areas; 11) the care team's willingness to respond inquiries; 12) the rating of their children's/grandchildren's regular follow-ups for medical care and 13) the overall level of satisfaction towards the services of the care team at the Out-patient Surgical Unit and the Tawanchai Center (as shown in

Table 1. The CLT KPIs of the quality of care when comparing the previous and present surveys

The KPIs	Target Goals	Outcomes (%) old (n = 36)	Outcomes (%) updated (n = 36)
1) Ratings from patients who had undergone cleft surgery at Srinagarind Hospital	100	-	100
2) Ratings from patients who had received Cheiloplasty at 3 to 6 months	100	93.75	100
3) Ratings from patients who had received Palatoplasty at 10 to 18 months	100	92.50	100
4) Ratings from patients/caregivers who had understood the treatment plan of medicine team	100	83.01	88.89
5) Ratings about the preparation for pre-operative care by patients/caregivers	100	84.72	97.23
6) Ratings from patients/caregivers who had had continuous follow-up	>90	92.06	94.45
7) Ratings about patient's/caregivers' level of satisfaction in acquiring information from the care team	>85	89.69	94.45
8) Ratings from patients/caregivers who had received the guidelines and appointment calendar	100	88.44	100
9) Ratings about the overall satisfaction of patients/family members regarding the services of the care team	>90	92.11	100

Table 2. The out-patient surgical unit's and the Tawanchai Center's KPIs regarding the service quality of the care team (n = 36)

The KPIs	Target goals (%)	Outcomes (%)
1) Rating of the care team's constant explanation about diseases, illnesses, and medical treatments	100	100
2) Rating of the care team's consistent willingness to give assistance	100	94.44
3) Rating of the care team's immediate response when needed	100	93.68
4) Rating of receiving guidance for self-care or child care	100	100
5) Rating of the care team's potential in giving service	100	100
6) Rating of the care team's provision of coordination services	>90	97.83
7) Rating of the care team's provision of areas and service information	>85	97.82
8) Rating of respectfulness and equality in the care team's services	100	100
9) Rating of opportunities to express their feelings and opinions on nursing services	>90	100
10) Rating of cleanliness, sufficient lighting, adequate air flow, and no odors in the service areas	>90	100
11) Rating of the care team's willingness to respond to inquiries	>90	100
12) Rating of their children's/grandchildren's regular medical follow-ups	>90	100
13) Rating of the overall level satisfaction towards the services of the care teams at the Out-patient Surgical Unit and the Tawanchai Center	>90	100

numbers 8 to 13) had all been at 100% (Table 2).

Discussion

As shown in Table 1 (the 9 CLT KPIs of quality care), when a comparison was made between the previous study and the present survey, different outcomes were revealed. In the previous survey, there were 3 KPIs which had been found to achieve their target goals: 1) the patients/caregivers had continuous follow-ups (92.06%); 2) the patient's/caregivers' level

of satisfaction in acquiring information from the care team (89.69%); and 3) the overall level of satisfaction that the patients/families had towards the services received from the care team (92.11%). The present survey in this study showed that there had been 7 KPIs which had achieved their target goals as follows: 1) the care team's constant explanation about diseases, illnesses, and medical treatments (100%); 2) the patients who had received Cheiloplasty at 3 to 6 months (100%); 3) the patients who had received Palatoplasty at 10 to

18 months (100%); 4) the patients/caregivers who had received continuous follow-ups (94.45%); 5) the patient's/caregivers' level of satisfaction in acquiring information from the care team (94.45%); 6) the patients/caregivers had received the guidelines and the appointment calendar (100%); and 7) the overall level of satisfaction that the patients/families had had towards the services of the care team (100%). Since this survey had merely targeted patients (without syndromic CLP) who had undergone surgery at Srinagarind Hospital, the patients had been operated upon at a certain time as specified by the operation protocol.

Significantly, there are many reasons that the survey of the 9 KPIs of CLT, affecting the quality of care, had reached more target goals. This was due to the fact that the congenital anomalies, such as cleft lips and cleft palates, can have such critical impact on the expectations and the feelings of the parents of the affected children and their siblings. Given that the conditions of this disease affects the structure of the face in many dimensions, the parents are willing to bring their children to receive treatment and surgery. The process, which begins in infancy, requires that the children be continuously brought to the hospital for follow-up visits in order to achieve facial aesthetics, a balanced structure, clear speech, and communication so that these children can, as close as possible, live as a normal person in society⁽⁶⁾. The improved public health system of Thailand has expressed much concern about this group of patients. For example, under the auspices of the National Health Security Office [NHSO] Area 7 (Roi-Et, Khon Kaen, Mahasarakham, and Kalasin), the "Smart Smile & Speech Project"⁽⁷⁾ was established to support patients and families in the 4 responsible provinces to gain access to medical care. The patients no longer have the need of a referral system. Instead, they can choose the service centers they prefer. The Center for Patients with CLP and Craniofacial Deformities at Khon Kaen University (Tawanchai Center) is also playing a large role in becoming the center for comprehensive assistance, including the Tawanchai Foundation for Patients with CLP and Congenital Deformities, which, apart from the support they receive from the government, assists the patients with their expenses. The office is located in Srinagarind Hospital. This offers the patients greater convenience in accessing services and allows them more choices. The findings are similar to the results of a study by Lekbunyasit et al⁽⁸⁾, who had examined the statistics of cleft patients at Srinagarind Hospital from 1984 to 2007. It was found that the factors, which had

affected the patients' selection when accessing treatment and surgery, had been the widely-accepted reputation of the Faculty of Medicine at Srinagarind Hospital in regard to its expert personnel and high-tech medical equipment. This reputation has led to increasing numbers of patients' visits. In addition, incentive funding has been provided by the Red Cross to assist in transporting patients to the hospital who are coming to receive the following services: surgery, speech practice, audiology and hearing tests, and dental care. This has been another motivating factor that has continuously increased the numbers of patients' visits, especially when the Tawanchai Center has taken part in advancing the transportation support by the Red Cross.

The study on the development of the KPIs for the Out-Patients Surgical Unit and the Tawanchai Center regarding the quality of care indicated that during the 4 months of the study there had been 11 KPIs which had achieved their target rates as follows: 1) the care team's gives constant explanations about diseases, illnesses, and medical treatments (100%); 2) receiving guidance for self-care or child care (100%); 3) the care team's potential in giving service (100%); 4) the care team's provision of coordination services (97.83%); 5) the care team's provision of areas and service information (97.82%); 6) respectfulness and equality in the care team's services (100%); 7) opportunities to express their feelings and opinions on nursing services (100%); 8) cleanliness, sufficient lighting, adequate air flow, and no odors in the service areas (100%); 9) the care team's willingness to respond to inquiries (100%); 10) Their children's/grandchildren's regular medical follow-ups (100%); and 11) the overall level of satisfaction towards the services of the care teams at the Out-Patient Surgical Unit and the Tawanchai Center (100%).

For this study, the researchers have developed KPIs of nursing service quality which have been based on real work situations and the results from the previous CLP KPIs. They have analyzed and developed the Out-Patient Surgical Unit and Tawanchai Center KPIs in terms of service and the caregiver's levels of satisfaction towards the quality of care for patients with CLP in the Out-Patient Surgical Unit and in Tawanchai Center. Since this research has specifically selected patients with CLP, the KPIs were totally effective and applicable. The findings corresponds to the results of a study by Limpanyalert⁽⁹⁾ who stated the comparison of key performance indicators could bring about systemic solutions and could be developed

as a knowledge base. In addition, a study by Prasith-rathsint⁽¹⁰⁾ pointed out that the KPIs are objective because they can be determined by their realistic or concrete existence. In addition, a study by Sethapanich⁽¹¹⁾ addressed the fact that to achieve the complete key performance indicators, there are 3 aspects which need to be considered: 1) the KPIs should be applicable, 2) they should be consistent with reality, and 3) if there are any problems, the KPIs should be improved for completeness.

To assist in measuring the quality of patient care, the information system has been developed to use as database in monitoring the KPIs of the quality of care. In the KPIs of care team service quality for the Out-Patient Surgical Unit and the Tawanchai Center, the information system is able to automatically process and report the data in percentages, which faster than the manual calculations from the previous survey. The continuous and systematic monitoring of the KPIs of the quality of patient care will generate updated information, which will offer benefits to planning for patient care. The information derived from the monitoring system should be re-analyzed in order to discover the causes or trends of problems from the past to the present. The declaration of the relationship between then factors, which are related to patients care, will contribute to providing better quality services in the future⁽¹⁴⁾.

Therefore, it can be concluded that the development and monitoring of the Out-Patient Surgical Unit and Tawanchai Center KPIs, which is directly related to the service quality of the care team, can be utilized as tools which can be used to develop research knowledge gleaned from information searches, literature reviews, and data analysis. This knowledge can be utilized to improve the quality of patient care, to augment patient services, to create new knowledge, and to enhance the organizational performance of the multi-disciplinary team so that patients with CLP can receive excellent benefits.

Conclusion

The development of the KPIs for the Out-Patient Surgical Unit and the Tawanchai Center and the 9 CLT KPIs for patients with CLP have led to the identification of a total of 22 issues. The information system, which has been developed, is able to automatically record, process, and report data in percentages. Therefore, in order to improve services, the results could easily be applied by the multi-disciplinary team.

What is already known on this topic?

The key performance indices for patients with CLP need to be developed to improve the quality of care and to determine the outcomes. Moreover, these indices can be used as guidelines for the care which is provided by the multi-disciplinary team.

What this study adds?

For effective care, multi-disciplinary specialists are needed from multiple disciplines to work with patients. In order to achieve the designed goals, the following tools are considered to be important: 1) setting the same targets for patient care and services; 2) establishing the key performance indicators that cover all requirements; and 3) developing database systems in order to: a) enhance data storage, b) to create a well-organized processing system, and c) to consistently update the data. These tools can be utilized to apply the results in order that the outcomes of cleft care can be appropriately monitored and so that nursing care plans can be adequately developed. These will not only be beneficial for the patients, but will also allow their needs and expectations to be productively met.

Acknowledgements

The authors gratefully acknowledge funding from the following: a) the Research Division of the Faculty of Medicine; b) the Center of Cleft Lip-Cleft Palate and Craniofacial Deformities of Khon Kaen University under Tawanchai Royal Grant Project; c) the Director and Head of Services at Srinagarind Hospital; d) Mr. Supachai Wongchuen, the Information Technology Officer of the Tawanchai Team; and e) all of the patients and families who have participated in this study.

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Ruangsitt C, Phraserthsang P, Banpho Y, Lamduan W, Glathamnuay S, Nuwantha A. Incidence of cleft and cleft palate in three hospitals in Khon Kaen. Khon Kaen: Department of Orthodontics, Faculty of Dentistry, Khon Kaen University; 1993.
2. Chowchuen B. Interdisciplinary care of patients with cleft lip and palate. And congenital anomalies of the face and skull. Bangkok: Siri Packaging Offset; 2004 [in Thai].

3. Pradubwong S. Cleft lip and palate patients by age interdisciplinary. *Srinagarind Med J* 2007;22:291-6 [in Thai].
4. Pradubwong S, Volrathongchai K, Chowchuen B. Treatment of 4-5 year old patients with cleft lip and cleft palate in Tawanchai center. *J Med Assoc Thai* 2013;96 (Suppl 4):S1-8.
5. Division of Nursing Srinagarind Hospital. Satisfaction questionnaire on service quality of Division of Nursing, Srinagarind Hospital. Khon Kaen: Faculty of Medicine, Khon Kaen University; 2015. [Mimeograph].
6. Pradubwong S, Mongkholtawornchai S, Akaratiensin P. Factors related to treatment of patients with cleft lip-palate in Srinagarind and Khon kaen Hospital. Khon Kaen: Division of Nursing, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University; 2009.
7. The manual of “Smart Smile & Speech Project” for the 50th birthday anniversary of Her Royal Highness Princess Maha Chakri Sirindhorn. 2nd ed. Bangkok: Workprint Press 93; 2007.
8. Lekbunyasap A, Pradubwong S, Juntachum W, Udomthanasap S, Chowchuen B. Statistical study of patients with cleft lip and palate was admitted to the nursing Year 1984-2007. *Srinagarind Med J* 2009;24:240-6. [in Thai]
9. Limpunyaalert P. Weaving past to present for the future [Internet]. Healthcare Accreditation Institute (Public Organisation); 2015 [cited 2016 Sep 1]. Available from: <https://med.mahidol.ac.th/cqs/sites/default/files/public/THIP.pdf>
10. Prasithirathapan S. Methodology of social science research. 12th ed. Bangkok: Chulalongkorn University; 2003. [in Thai]
11. Sethapanich N. Development of indicators and review process. In: Yamsakul N, Keiwbarnka B, Nimit-Arun N, editors. The seminar, bureaucratic reform ONEC. 4th (Academic); 1997 Mar 12-14;. Dusit Resort and Polo Club, Phetchaburi; 1997.
12. Pradubwong S, Pongpagatip S, Volrathongchai K, Chowchuen B. The development of the nursing care system for patients with cleft lip-palate and craniofacial deformities at Tawanchai Cleft Center, Srinagarind Hospital, Khon Kaen, Thailand. *J Med Assoc Thai* 2012;95(Suppl 11):S55-61.
13. Junthakarnbundit P. The development of the in-patient service quality satisfaction indicators of the community hospital. *J Nurs Health Sci* 2011;5:80-91. [in Thai]
14. Jeerapat W, editor. Information technology of nursing and health. Bangkok: Chulalongkorn University; 2001 [in Thai].