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The Quality Improvement Information System for Surveillance and Monitoring for Patient Safety and Personal Safety in Kalasin Hospital, Kalasin Province, Thailand

Areeauey ABHICHAYA [a,1], Leethongdissakul SONGKHAMCHAI [a]
Srichaikul BUAVAROON [a] and Thiabrithi SURASAK [a]
[a] *Faculty of Public, Health, Mahasarakham University, Thailand*

Abstract. This mixed-method research aimed to evaluate in need assessments and develop an intervention model for quality improvement information system-QIIS for surveillance and monitoring Patient safety and Personals safety in Kalasin Hospital, Thailand. The process was divided into 3 phases, 1) Studies on needs assessments of patients and hospital staff-2P, 2) Develop the program and assessment 3) Program implementation and evaluation. The 245 participants were participated during October 2019 - Februarys 2020. A questionnaire and semi-structure interview by content analysis were applied to investigate on needs assessments and intervention evaluation were using checklist for observation. The results revealed that information alert from supportive technology especially in real-time were sophisticated improving and significantly increasing with the positively and satisfaction levels of the staff increasingly particularly in pre and post observation (p-value <0.05). The key success of QIIS was comprised as suddenly response and information alert system, for this reason their staff could be immediately responsive to problems as much as they affords.

Keywords. Quality improvement, Information surveillance, information alert

1. Introduction

The Safety system is necessary goal of the health service system and it is significant foundation for organization quality management [1]. The Ministry of Public Health-MOPH of Thailand has announced policy direction to Hospital patient safety and personal safety in all level off care [2]. The both, patient safety and personal safety has founded an adverse incident. There were a tendency to increase in the hospital [1]. Kalasin hospital, Kalasin province is a public general hospital under control of MOPH, has embraced the top policy and they endeavored to attempt in participation of patient safety and personal safety criterion into practice by defining the strategic direction to

[1] Corresponding Author, Areeauey Abhichaya, Doctor of Public Health student, Faculty of Public Health, Mahasarakham University, Mahasarakham Province, Thailand; E-mail: rachanee929@gmail.com.

focus on becoming the 2P Safety hospital [3].The ultimate goal is the 2P Safety hospital has the patient and personal in the hospital safety [4].

However, previously, patient safety and personal process were difficult to access their information. In order to the reasons of prevent, reduce the severity of incidents and surveillance that may occur. In addition, it was found that the factors related to the obstacles to reporting adverse events were lack of time, fatigue, poor reporting tools and corporate culture.[6].These sophisticate reasons have must be developed to access information system that is sustainable, appropriate and maintain of surveillance and monitoring systems.[7]. Thus, in this research were employed the mixed method both action research framework to implement intervention. This was evidence-based finding develop the quality of the organization which participated in the development, engaging supportive technology. It was according to policy from the top level to encourage the Smart hospital Thailand 4.0 through, 2P safety strategy [5].

2. Methods

This mixed methods study was conducted in Kalasin Hospital, Kalasin Province, Thailand during October 2019 to February 2020. The units for this study were drawn from 7 sector of patient care units of hospital.

The population of this study was working in patient care units of Kalasin hospital. It was included as 962 cases. The number of sample size was calculated by using the sample size calculation formula to estimate the average population. The 245 samples were systematically randomized to the number of desired results.

The created questionnaire and semi-structured interview were applied as the research tool. The questionnaire was divided to 2 domains. First domain inquired about professionals information. Second domain queried their satisfactions information were applied from Opas [6] had Cronbach alpha 0.78.

Collect data was conducted by using online questionnaire via the QR code scan by smart phone distributed to the randomized subjects. And, quantitative data has been collected from Incident report of patient safety and personals safety in Program “Polang” Report. This research was conducted with permission from the Research Ethics Committee, Kalasin Hospital.

Qualitative data had been approached with an critical analysis by content analysis. Descriptive statistics were included as frequency distribution, percentage, mean, standard deviation, Inferential statistics, such as Independent t-test.

3. Results

Phase 1 Show that general information of professional in Kalasin Hospital, Kalasin province.

Figure 1. Health care position of studied subjectS

The result data of information system needs for supporting surveillance and monitoring 2P Safety nurse by content analysis founded 1. Need a system that is easy to use 2. Have a secure system for patient and personal information 3. The menu of all process are simply 4. There is a notification system when a report occurs 5. The system can save historical data.6.The system has a date for revisions, And has notification system 7. The department can view the report 8. Fast system.

Phase 2, the intervention has been introduced the supportive information system requirements to develop information system. To surveillance and monitor the safety of patient and personals. According the program was employed a framework of System Development Life Cycle: SDLC [9] Which has function consisting of,1. The system logs in the system according to the user rights. 2.Risk incident the reporting system for 2P Safety then after report has Line alert at system and Mobile phone. 3. Review tracking system and collect the incident of risk. 4.Report and processing system

Table 1. The result of the information system user satisfaction rating, Surveillance and tracking patient safety and personal safety .Kalasin hospital, Kalasin province (Phase 3)

	Pre - Intervention			Post Intervention		
	average	S.D.	Level-Satisfaction	average	S.D.	Level Satisfaction
Functional Requirement Test	3.39	0.95	Moderate	4.62	0.52	Most
Functional Test	3.49	0.80	Moderate	4.83	0.82	Most
Usability Test	3.55	0.49	Moderate	4.73	0.49	Most
Security Test	4.53	0.57	Most	4.53	0.57	Most
Total	3.74	0.70	Moderate	4.67	0.60	Most

Table 2. The result of satisfaction and Risk incident rate and indicator of SIMPLE patient and personal in Kalasin Hospital average , dependent t test

	average	S.D.	t	p-value
Satisfaction				
Pre development	2.55	1.87	8.77	$< 0.005^{*}$
Post development	3.14	2.24		
Risk incident rate were be fixed in 24 hours				
Pre development	2.45	1.24	9.65	$< 0.005^{*}$
Post development	4.04	2.31		
Indicator of SIMPLE patient and personal safety				
Pre development	2.39	1.95	7.39	$< 0.005^{*}$
Post development	3.52	1.76		

The result were showed Satisfaction scores, Risk incident rate were be fixed in 24 hours and Indicator of SIMPLE patient and personal safety had Significant at 0.005 level when compare with pre-post development.

4. Discussion of results

From the results of the study, **First** it was found that in general information of health professions of Kalasin hospital the largest number are nursing profession. This finding is correspond with reality of the hospital context in Thailand that nurses are forceful group of people who are involved in hospital patient and personal safety current results is agreed with Kaew somsri siwaporn reported [7].

For the information system needs for supporting surveillance and monitoring 2P safety by content analysis founded has intelligence technology support with team

development systems. Associated with Jingxuan Li [8] report. He founded user needs information system that is easy to use has notification system.

The Second phase, that were implementation program Polang surveillance report of 2P Safety when has incident and report for prevention harm with alert Line. More ever the system showed data real time for administrator. And there were rapid management incident and harm of 2P safety in hospital. Found that overall height level satisfaction. With agree was Pawat logawit (2013) [9]. They found that satisfaction of informatics system for risk management it height level with compare pre and post development program. **The last phase** result the all satisfaction and Risk incident rate, Including Indicator of SIMPLE 2P safety had Significant at 0.005 level when compare with pre-post development. Accordance with the previous report of Watcharee Sangmanee (2018) [10]. A study of Incident Reporting in Songklanagarind Hospital. found that Satisfaction had Significant at 0.005 level.

5. Conclusions

In conclusion, the QIIS was suddenly response and information alert system via supportive technology and social network connection, so that their staff could be immediately responsive to problems from frontline station. This was improving model for the surveillance and monitoring in 2P safety were significantly important and success for quality awareness and quality control in the organization.

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