IMPACT OF SPECIAL SURGICAL SBAR STANDARDIZED SHIFT GUIDELINES ON SPECIAL SURGICAL ADVERSE EVENTS AND SHIFT QUALITY

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ABSTRACT

Objective*: To observe the improvement value of the special surgical SBAR standardized shift shift guidelines for shift-related adverse events and shift quality during the special surgical SBAR bedside shift process.*

Methods*: Our hospital in July 2018 based on image visual strengthening SBAR bedside shift mode, convenient sampling survey method collection before implementation (January 2018 to June 2018, control patients), after implementation (July 2018 to January 2019, patients), the control group using routine SBAR bedside shift mode, the experimental group using the special surgery SBAR standardized shift guidelines, compare nursing staff shift related adverse events, shift quality control score, clinical nursing staff adverse event perception scale.*

Results*: The incidence of patient shift-related adverse events in the post-implementation observation group was 4.29% (3 / 70) lower than in the pre-implementation control group (P <0.05).All dimensions of quality control score were higher than before implementation (P<0.05); the bedside shift time after implementation was lower than before implementati. Patient nursing risk, system process risk and total score were higher than before implementation (P <0.05).*

Conclusion*: The SBAR can help reduce the risk of adverse events related to special surgery shift, improve the quality of shift, and improve the perception of nursing adverse events.*

Keywords: *Picture visual reinforcement, SBAR bedside shift mode, Special demand ward, nursing.*

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Introduction

Special surgery is a special medical nursing service mode that develops with the change of medical mode. Most of the residents who need special surgery are leaders or managers of various industries, and they are under great work pressure, which requires high professional quality and communication skills of nursing staff. Among them, there are many patients who don't follow the doctor's advice or question the way of diagnosis and treatment[(1)]. Nursing shift is an important link for patients to get continuous and timely treatment and nursing, which can ensure the successful completion of treatment and nursing work. Situation-background-assessment-recommendation (SBAR) shift mode was originated from the British medical industry, and is a standardized shift mode used to convey patient information[(2)]. Medical staff can transmit their illness through concise table mode, which can promote the efficiency of information transmission. However, patients of special surgery have high cognitive needs for surgical outcomes, physician expertise, and future prognosis. Therefore, relying solely on textual and verbal forms of expression is difficult to meet the special needs of patients for improved cognition of their disease, which increases the risk of patient non-compliance with treatment[(3)]. Different from text description, picture visual reinforcement is clear, accurate, concise and intuitive[(4)]. The research shows that the multimedia shift mode based on picture visual reinforcement can improve the shift quality and reduce the risk of shift related adverse events[(5)].

Therefore, on the basis of the original SBAR shift mode, our hospital has established the SBAR standardized shiftguidelines for special surgery with picture visual reinforcement. To clarify the application value of theguidelines in special surgery, the results are reported as follows.

Research objects and methods

Research objects

In July, 2018, our hospital launched the SBAR bedside shift mode based on picture visual reinforcement. Through random sampling survey method, 70 cases before the implementation (from January, 2018 to June, 2018) and 70 cases after the implementation (from July, 2018 to January, 2019) were selected. The patients who underwent the conventional SBAR shift mode before the implementation were classified into the control group

Inclusion criteria: • Age of 18-65 years; • bedside shift is required; • Check-in time > 3d. Exclusion criteria: □ Patients with tumor; • Patients with severe visual impairment; • Patients with hearing impairment or communication impairment. During the study period, there was no change in nursing staff. The nursing staff involved in this study included 13 women, aged 22-45years, 10 undergraduates and 5 specialists, 5 staff with working years over 5 years, 4 staff with working years over 10 years, 2 supervisor nursing staff, 8 senior nursing staff and 3 nursing staff. The patients in the control group included 38 males and 32 females, aged 18-65 years, with an average age of (42.38±4.79) years. Among them, there were 15 special obstetric patients, 37 special surgical patients, 18 special orthopedic patients. 32 patients had bachelor's degree. 27 patients had junior college degree, and 11 patients had high school degrees. Their hospitalization time was 4-7 days and their average hospitalization time is (5.31±0.71) days; the patients in the experimental group included 38 males and 32 females, aged 18-65 years, with an average age of (42.38±4.79) years. Among them, there were 13 special obstetric patients, 38 special surgical patients, and 19 special orthopedic patients. 33 of them had bachelor's degree. 26 patients had junior college degree, and 11 patients had high school degrees. Their hospitalization time was 4-7 days, and their average hospitalization time was (5.12±0.64) days. There was no statistical difference between the two groups in gender, age, department, educational background and hospitalization time ($P > 0.05$), indicating high comparability. This study was reviewed and approved by the Medical Ethics Committee of our hospital, and the patient's informed consent to this study was included and the informed consent form was signed.

Methods

Before the implementation (from January 2018 to June 2018), the nursing staff took the routine SBAR bedside shift mode to nurse patients. During the bedside shift process, the patient's condition, basic information and medical measures were comprehensively shifted. In order to ensure the shift effectiveness, the successors took over individually, and the shifting nursing staff followed the SBAR shift process to makeshift inquiries, especially about skin conditions, postoperative precautions, catheters, and current medication. The nursing staff carried out bedside shift in the order of status quo (S), background (B), assessment (A) and recommendation (R) by word and language description, and patients or family members attended the shift, mainly including: patients' diagnosis, complaints, changes in their condition, and nursing problems that still need attention; allergy history, past history, medication, nursing measures, and positive sign of the patients; vital signs, self-care ability, degree of pain, safety risks, etc.; recommendations on nursing measures and patient safety risk management that should be paid attention to after shift. Shift shall be carried out according to the sequence of S –> B –> A –> R.

After implementation (from July 2018 to January 2019), nursing staff implemented SBAR standardized shiftguidelines for patients in the hospital.

(1) Establishing SBAR standardized shiftguidelines for special surgery. According to the four dimensions of SBAR standardized communication procedure, combined with the characteristics of special surgery diseases, nursing standards, shift system and the requirements of humanistic care, the standardized shiftguidelines for special surgery was established after many discussions and analysis by department members and consultation with doctors (see Table 1).

(2) Implementing the preparation work before the SBAR standardized shiftguidelines for special surgery, and establish the routine PPT template for shift. The head nurse is responsible for collecting the necessary shift contents involved in the process of shift for nursing staff, preparing them into the

form of shift PPT template, and conducting a trial application in the morning meeting. To display the PPT in a clearer and more eye-catching manner during the bedside shift, the font is set to No.50 Song typeface. There are four PPT templates: introduction of treatment area, introduction of various surgeries, introduction of precautions after operation, and greetings after shift.

Situation (identity verification and diagnosis of patients) • Bed number • Name • Diagnosis • Age • History of allergy
Background (relevant background information of patients. The needs of patients and their families need to be fully understood, but only the changed or patient-related contents are handed over) • Issues of concern to patients and their families (PPT introduction of treatment area, PPT introduction of various surgeries when necessary) • Requirements of patients and their families • Abnormal test (cases)
Assessment (the content that must be handed over. Especially, when the color of catheter drainage fluid is abnormal, it shall be described with corresponding pictures) • Vital signs (skin condition) (click to insert picture) • State of consciousness • Name of surgery/date after surgery (PPT introduction of various surges and PPT introduction of precautions after operation) • Pain (VAS scoring method) • Name of catheter (picture of transfusion tube, picture of injection pump/transfusion pump, picture of catheter and other related catheters) (click to insert picture) • Color, quality and quantity of drainage tube (with picture) (click to insert picture) • Liquid inflow and outflow • Current treatment (picture of applied drugs) (click to insert picture) • Problems that patients may face after discharge from hospital
Recommendation (doctor's advice, treatment/examination related to patients; other humanistic care of patients and their families, and other contents that need to be handed over. This form doesn't need to be filled out by nursing staff one by one, but it can provide a clinical thinking mode for nursing staff, so as to guide nursing staff to fully understand and evaluate patients' conditions and achieve effective communication of information. After using the shift list for one week, listen to the nursing staff's opinions and suggestions, and modify the shift list for the second time) • Doctor's advice that need to be executed. • Issues and indicators to be concerned after work (shift greetings PPT)

Table 1: SBAR standardized shiftguidelines for special surgery.

(3) Implementation of SBAR standardized shiftguidelines for special surgery. • When patients are admitted to special surgery, the shift staff use PPT template of treatment area introduction (providing introduction only when the patient is admitted to hospital for the first time) to provide patients with photos of attending doctors, residents, responsible nursing staff, head nursing staff, professional skills, relevant qualifications and related introductions, hospital honors, and show the professional level of the department and medical ethics of doctors in the form of pictures. • When the patient accepts the shift before the surgery, the shift staff uses various PPT templates of surgery-related introductions, and explains the patient's surgery in the form of photos during the bedside shift, especially the changes of the condition related to the surgery. It is necessary to compare the differences between the photos before and after the change of the condition. At the same time, for those who plan to undergo surgery, the patient's vital signs are displayed page by page in the form of pagination, so as to clarify the patient's night sleep quality and fall risk. When the patient has abnormal signs, a red eye-catching sign is used, and the PPT shows the doctor's advice and treatment results, which are distinguished by green characters, so as to record the patient's last meal time. • During the shift of patients after surgery, the shifting staff introduce PPT template by using the notes after surgery, giving information on anesthesia, surgery mode, incision dressing, drainage fluid and analgesic medication, and showing the relevant notes after surgery to each patient in the form of PPT pages. During the bedside SBARshift, the skin condition, blood circulation, medication, drainage fluid and incision dressing of patients are accompanied with a brief text description. • At the end of each shift, the shifting staff use the blessing PPT template to display the blessing PPT after the shift, explain the matters that patients need to pay attention to again, and set warm and unique blessing words and motivational words to inspire patients' confidence in recovery and establish their determination to overcome the disease. Before the shift of the shifting nurse, the PPT template with pictures inserted into the fixed position of the template is used. After the PPT is made, it is shared on the patients mobile phones and the shiftingnursing staff's IPAD. Patients and shifting nursing staff can use the mobile phone and IPAD to view the corresponding contents. The shift is completed through content sharing and synchronous introduction. Patients can watch the shift contents at the same time.

Observation indicators

The incidence of nursing adverse events related to shift in our hospital, the score of quality control during shift, the oral shifting time, the perception of adverse events of nursing staff and the nursing satisfaction before and after the implementation were collected.

(1) The nursing adverse events related to shift are based on the nursing adverse events report recorded in the nursing information system of our hospital, and only the nursing adverse events related to shift[6] are collected, that is, the surgery shift events, transfusion shift events, skin shift events, drug application events and other adverse events caused by careless and unclear shift process and omission of shift.

(2) The score of quality control during shift is evaluated from the perspective of usefulness and ease of use of shift. With reference to the shift quality control table designed by Qian Jun, etc.[7], four dimensions, namely system implementation (30 points), articles handover (20 points) and patient shift (50 points) are set, with a total score of 100 points. It is the score obtained from the assessment of the shift quality control of nursing staff by the head nursing staff in each department. The higher the score, the more comprehensive the shift of the nursing staff[3].

(3) Scale of clinical nursing staff's risk perception of adverse events. It is a localized scale

of risk perception of clinical adverse event in China designed and developed according to Mao Qiuyun et al.[8]. The scale is divided into 20 items, which are constructed from three dimensions, including nursing risk, system process risk and nurse operation risk. Likert grade 6 is adopted. The higher the score, the higher the degree of nursing staff's perception of adverse events. It is an evaluation tool for clinical nursing staff's perception of adverse events and reporting behavior. The coefficient of correlation between each dimension and the total scale is 0.46-0.77, and the Cronbach α coefficient is 0.70-0.94.

Sample size calculation

In this study, nursing adverse events were taken as the main improvement direction. The study belongs to the non-inferiority/effectiveness test of the rate comparison between the two groups. The website of https://www.cnstat.org was used. α=0.05 and 1-β=0.80. The incidence of nursing adverse events in the experimental group was proposed to be 1.39%, and the incidence of that in the control group was proposed to be 3.79%[9]. The sample ratio was set at 1:1, and the boundary value was 0.06. The calculated sample size was n = 114. It was proposed that about 20% of the participants would be out of touch or dropped out, and the final sample size was set at 70 cases.

Quality control

Data collection was completed by two professional collectors, and the accuracy of data entry was guaranteed by double entry. If there is any difference between the data entered by the two data collectors, the third collector will decide the final result.

Statistical processing

SPSS 22.0 statistical software is used for statistical processing. The measurement data are expressed by x±s, and t-test is performed; the counting data are expressed by number and rate, and χ^2 test or Fisher exact test is carried out.The correction level α=0.05. P < 0.05 indicates statistically significant difference.

Results

Incidence rate of adverse nursing events in two groups of patients: after the implementation, there were one case of surgery shift (the nursing staff omitted the fact that the patient's urethral catheter had been removed after surgery, and the successor prepared catheter removal materials again without careful observation), one case of skin shift (the successor ignored the small-scale abrasion of the patient's face, but found it in time, which did not cause serious adverse events), and one case of drug application (the patient brought his own medicine, and the shifting nurse did not describe it unknowingly), with a total incidence rate of 4.29%(3/70). The incidence rates of surgery shift, transfusion shift, skin shift, drug application and injection pump/transfusion pump were all lower than those before implementation (P < 0.05) (see Table 2).

Group (number of patients)	Surgery shift event	Transfusion shift event	Skin shift event	Drug application event	Injection pump/transfusion pump event	Incidence rate of adverse events (%)
Control group (70)	12	6	7	11	10	17(24.29)*
Experimental group (70)	1	0	1	1	0	3(4.29)
x^2	10.187	-	4.739	9.049	-	11.433
P	0.001	0.028	0.030	0.003	0.001	0.001

Table 2: Comparison of incidence of nursing adverse events between two groups [n(%)].
*Note: *indicates calculation by the number of patients with adverse events; - indicates Fisher's exact test method.*

Comparison of nursing staff's score of quality control during shift and shift time

After the implementation, all dimensions of nursing staff's score of quality control during shift were higher than those before the implementation (P < 0.05); after the implementation, the bedside shift time was shorter than before (P < 0.05) (see Table 3).

Time (nursing staff)	System implementation	Articles handover	Patient shift
Before implementation (13)	26.77±2.49	12.54±2.93	44.62±1.94
After implementation (13)	28.92±1.32	17.38±1.80	48.38±1.98
t	3.222	4.220	7.073
P	0.007	0.001	<0.001

Table 3: Comparison of score of quality control during shift before and after implementation (x s)($\bar{x}$±s).

Nursing staff'srisk perception of adverse event

Time (nursing staff)	Patient nursing risk	System process risk	Nursing staffoperation risk	Total score
Before implementation(13)	11.77±3.70	10.08±2.29	5.82±2.76	27.77±5.04
After implementation(13)	14.62±3.66	12.69±2.53	6.01±2.59	33.46±6.31
x^2	-2.306	3.721	0.215	3.152
P	0.040	0.003	0.834	0.008

Table 4: Comparison of nursing staff's risk perception of adverse events before and after implementation [n (%)].

The patient nursing risk and system process risk of nursing staff and the total score after implementation were higher than those before implementation ($P < 0.05$) (see Table 4).

The inhibition effect of SBAR standardized shiftguidelines for special surgery on shift related adverse events

Although SBAR shift mode can obtain a large amount of patient information for nursing staff during shift[10], due to the numerous and complicated professional nursing needs of special surgery, the need for the completeness and accuracy of shift information of nursing staff is higher[11]. On the basis of the morning meeting, this study described the changes of patient's condition by means of picture reinforcement and made real-time comparison, which could provide help for early acquisition of abnormal changes and reduce the risk of adverse events related to shift. At the same time, shift by pictures can supervise the work of night shift nursing staff. To avoid the untimely display of patients' condition, night shift nursing staff will get the picture information in time and keep it, which will further enhance the initiative of night shift nursing staff in shift work and further reduce the risk of adverse events related to shift[12-13]. In this study, it was found that there were only 3 adverse events related to shift in the experimental group. The incidence rate was only 4.29%, significantly lower than that in the control group. This indicates that the application of SBAR standardized shiftguidelines in special surgery can effectively inhibit the adverse events related to shift. This result may be mainly because pictures enhance the integration of SBAR bedside shift process, and strengthens the quality control of nursing staff shift by way of guidelines.

SBAR standardized shiftguidelines for special surgery can improve the score of quality control during shift

It is considered that the successors' inability to concentrate their thoughts in the process of shift, the lack of emphasis in shift and the difficulty in obtaining nursing points are the important reasons for the defects in the nursing process[14]. For SBAR morning shift only, the successor is still in a passive position, resulting in untimely or incomplete access to nursing-related information[15]. SBAR bedside shift mode based on picture reinforcement is a new nursing mode which introduces pictures and PPT into SBAR shift process and carries out bedside shift in special surgery[16-17]. In this study, pictures and PPT were used to explain and follow SBAR's shift route, so as to avoid the influence of personal expression ability, shift ideas and other factors. It is more vivid and dynamic to show the changes of patients' condition by using focused and eye-catching multimedia forms, which is easy to attract the attention of successors and reduce the information loss in the process of shift[18]. The results of this study confirm that the quality control score is higher when the SBAR bedside shift mode based on picture reinforcement is used. It can be seen that the application of SBAR standardized shiftguidelines in special surgery can improve the shift quality.

SBAR standardized shiftguidelines for special surgery can improve nursing staff'srisk perception of adverse events

On the basis of SBAR bedside shift mode and picture reinforcement, through enhancing patients' awareness of diseases, the nursing staff's awareness of adverse events risks has also been improved. Studies have confirmed that the higher the nursing staff'sshiftability and perception of adverse events, the better the patient's safety, the higher the quality of nursing staff'sshift, the higher the nursing staff's risk perception of patients' adverse events and the higher the overall safety level[19]. The results of this study confirmed that the patient nursing risk, the system process risk and the total score of nursing staff after implementation were higher than those before implementation ($P < 0.05$). It can be seen that the application of SBAR standardized shiftguidelines in special surgery can effectively improve nursing staff's perception of adverse events, and promote the perception of patient nursing risks and system process risks. Considering that the observation of the patient's condition is more detailed and vivid with pictures, the nursing staff will take pictures one by one in order to complete the shift content, which improves their nursing initiative, avoids the risk of insufficient perception of adverse events caused by insufficient information transfer ability of shifting nursing staff in the single SBAR shift process, and effectively improvesnursing staff's ability of risk perception of adverse events. This result is similar to that of Xia Lili[20]. However, this research is a single-center research, and it is still necessary to further construct a multi-center research method in the future to determine the accuracy of conclusions of this research.

Summary

SBAR standardized shiftguidelines for special surgery can reduce the risk of shift related adverse events, improve shift quality, shorten bedside shift time, enhance nursing staff's awareness of nursing adverse events, and improve patients' nursing satisfaction in service attitude, patient nursing process and health education.

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