Int J Clin Exp Med 2018;11(3):2665-2669
www.ijcem.com /ISSN:1940-5901/IJCEM0070563

Original Article

Clinical application of special nursing care for newborn in intensive care unit

Jingna Wang, Cui Liu, Yuxia Zhang, Xingxia Li

Department of Neonatology, Qilu Hospital of Shandong University, Jinan, Shandong Province, China

Received December 7, 2017; Accepted January 15, 2018; Epub March 15, 2018; Published March 30, 2018

Abstract: Objective: To observe the clinical effect of special nursing care for newborns in intensive care unit (ICU). Methods: A total of 120 newborns who received special nursing care in ICU from August 2014 to July 2017 were randomly divided into control group and study group, with 60 cases in each group. The control group was given conventional nursing care, and the study group was given individualized nursing care with risk management (special nursing care). The risk events, incidence of adverse events, mortality of newborns during hospital stays, length of stay and satisfaction of newborns' family members were compared between the two groups. Results: Compared with control group, newborns in study group had lower incidences of risk events and adverse events, lower mortality, shorter length of stay, as well as higher satisfaction of their family members (all $P<0.05$). Conclusion: Special nursing care for newborns in ICU can improve the treatment effect and safety of newborns, and it is worthy of clinical application.

Keywords: Intensive care unit, newborn, special nursing care

Introduction

Mostly, newborns in intensive care unit (ICU) are with complicated diseases and in severe state of an illness; they are in need of higher level of treatment and nursing care [1-3]. Nursing, which runs through the treatment, salvage and every part of daily care, can seriously impact the prognosis of patients once safety accidents occurred. It has been found that the quality of nursing care in ICU plays an important role on patients' survival rate and quality of life; therefore, improving the quality of nursing care is beneficial to the rehabilitation of newborns in ICU [4, 5].

With the renewal of nursing concept and the change of nursing mode, more reasonable nursing ways are being explored. Among them, special nursing care is widely accepted by medical staff and patients [6, 7]. Its core is patient-oriented, with maximum reduction of the occurrence of unsafe factors in nursing process. It relieves the pain, meets the requirements of patients, and recovers patients back into health [8, 9]. Studies have confirmed that nursing care can significantly accelerate the rehabilitation of patients, and improve the postoperative quality of life for patients [10, 11]. However, the clinical effect of special nursing care for newborn in ICU has not been explored until now.

This study included 120 newborns who received special care in ICU from August 2014 to July 2017, and analyzed the clinical effect of special nursing care for newborns in ICU.

Materials and methods

Subjects

This study was approved by the Ethics Committee of the hospital and obtained consents from all newborn patients' family members. A total of 120 newborns who received special care in ICU from August 2014 to July 2017 were randomly divided into control group and study group by computer randomized block method, with 60 cases in each group. The control group was given conventional nursing care, and the study group was given special nursing care with risk management.

Table 1. Comparison of the general data between the two groups

	Study group	Control group	χ^2/t	P
Number of cases	60	60		
Gender			0.139	0.709
Male	37	35		
Female	23	25		
Age (d)	11.8±3.1	13.1±4.3	-1.900	0.060
Weight (kg)	3.2±0.6	3.4±1.0	-1.328	0.187
Disease types			2.069	0.723
Convulsions	15	12		
Pneumonia	18	17		
Pathologic jaundice	17	15		
Hemolytic disease	4	5		
Purulent meningitis	6	11		

Inclusion criteria: Newborns with at most 28 days of birth; newborns who were admitted to ICU for treatment; newborns with treatment in ICU expected to be over 3 days.

Exclusion criteria: Newborns with serious self-diseases, such as heart disease, uremia, abnormal coagulation function; newborns with mental diseases; newborns who cannot coordinate.

Therapeutic method

The nursing care of the two groups started from the admission to ICU, and finished after the discharge from the hospital.

Control group: The control group was given conventional intensive care for newborns.

Study group: According to the experience and lessons of our hospital, the unsafe factors of nursing care included: The professional level and skills of nursing staff were not up to standard; the treatment environment in ward was messy and the management was not up to standard; the hand over and takeover of admission and discharge were not up to standard; the writing of medical records was non-standard; the management system of ICU was not up to standard with unclear rules of duties and responsibilities, and it could not play the role of supervision and promotion [12, 13]. Therefore, special nursing care was carried out for this group of newborns. Their nursing staff made corresponding nursing improvement after summing up the unsafe nursing factors. Special nursing care aimed to reduce the incidence of unsafe events as well as improve the quality of nursing and treatment effect through reduce the improper use of instruments, improper treatment of medical orders, non-standard nursing and non-standard pharmaceutical administration.

Observation index

The incidence of risk events and adverse events, neonatal mortality during hospital stays, length of stay as well as satisfaction of newborn patents' family members in the two groups were analyzed and studied.

Risk events included improper use of instrument, improper dispose of medical orders, non-standard nursing and non-standard pharmaceutical administration.

Adverse events such as vomiting (gastric contents spiting from the mouth), diarrhea (defecating more than 3 times daily), rash (macroscopic skin lesions in patients), restlessness (irregular movement mostly of limb when patients with disturbance of consciousness).

Satisfaction degree of newborns' family members was surveyed by a self-made satisfaction questionnaire after the child patients were discharged from ICU. The main contents of the questionnaire included the discomfort of treatment, treatment effect, adverse reactions and physical recovery state, etc. The total score of the questionnaire was 100 points; 81-100 points indicated that the patients were very satisfied with the treatment effect; 61-80 points showed that they were satisfied with the treatment effect; below 60 points indicated that they were not satisfied with the treatment effect. Patient satisfaction = (very satisfied cases + satisfied cases)/total cases *100%.

Statistical processing

Statistical software SPSS17.0 was used to analyze the data. The measurement data were expressed as mean ± standard deviation (mean ± sd), and the two independent samples t test was used for the comparison between two groups. Enumeration data were expressed as

Table 2. Comparison of risk events between the two groups

	Study group (n=60)	Control group (n=60)	χ^2	P
Improper use of instrument	1 (1.7%)	7 (11.7%)	4.821	0.028
Improper treatment of medical orders	2 (3.3%)	10 (16.7%)	5.926	0.015
Non-standard nursing	2 (3.3%)	9 (15.0%)	4.904	0.027
Non-standard pharmaceutical administration	2 (3.3%)	8 (13.3%)	3.927	0.048
Total risk event	7 (11.7%)	34 (56.7%)	27.008	<0.001

Table 3. Comparison of adverse reactions during hospitalization between the two groups

	Vomiting	Diarrhea	Rash	Restlessness	Total adverse reactions
Study group (n=60)	4 (6.7%)	2 (3.3%)	7 (11.7%)	6 (10.0%)	19 (31.7%)
Control group (n=60)	12 (20.0%)	9 (15.0%)	17 (28.3%)	15 (25.0%)	53 (88.3%)
χ^2	4.615	4.904	5.208	4.675	40.139
P	0.032	0.027	0.023	0.031	<0.001

Table 4. Comparison of mortality and length of stay between the two groups

Group	Mortality	Length of stay (d)
Study group (n=60)	1 (1.7%)	12.9±3.5
Control group (n=60)	9 (15.0%)	19.3±5.7
χ^2	6.982	-7.412
P	0.008	<0.001

rate, and tested by χ^2. The difference of P<0.05 was statistically significant.

Results

General data

A total of 120 newborns in ICU were included, with 60 cases in study group and 60 cases in control group. There was no significant difference in general data between the two groups (P>0.05, **Table 1**).

Risk event

Compared with control group, the risk events included improper use of instrument, improper treatment of medical orders, non-standard nursing and non-standard pharmaceutical administration in study group were significantly decreased (P=0.028, P=0.015, P=0.027, P=0.048 respectively), and the difference in the occurrence of total risk events between the two groups was statistically significant (P<0.001). See **Table 2**.

Adverse event

Adverse reactions such as vomiting, diarrhea, rash and restlessness occurred in both groups; the comparison of the differences in above adverse reactions between the two groups were significant (P=0.032, P=0.027, P=0.023, P=0.031 respectively); the difference in the occurrence of total adverse reactions between the two groups was statistically significant (P<0.001). See **Table 3**.

Mortality and length of stay

Compared with control group, the neonatal mortality in study group was lower, and the difference was statistically significant (P=0.008). The length of stay in study group (12.9±3.5 d) was shorter than that in control group (19.3±5.7 d) with statistically significant difference (P<0.001). See **Table 4**.

Satisfaction degree

Statistical analysis was performed for the survey on the treatment satisfaction of patients. In study group, there were 42 cases were very satisfied; 15 cases were generally satisfied; 3 cases were dissatisfied; the patients' satisfaction degree was 95%. The difference of satisfaction degree between study group and control group (58.3%) was statistically significant (P=0.022). See **Table 5**.

Discussion

Pediatric ICU is a ward to manage and nurse newborns with severe diseases and in high-risk conditions; additionally, the neonatal physical development of each body system is not perfect, with many physiological natural defects [14, 15]. Therefore, targeted nursing work is needed for child patients while medical staff

Table 5. Comparison of satisfaction degree on postoperative treatment effect between the two groups

Group	Very satisfied	General satisfied	Dissatisfied	Satisfaction degree
Study group (n=60)	42	15	3	95.0%
Control group (n=60)	29	6	25	58.3%
χ^2				7.603
P				0.022

are carrying out active treatment. Nursing care is severe, so special nursing care is extremely necessary. Besides personalized nursing care, the core of special nursing care is to exclude improper use of instrument, improper treatment of medical orders, non-standard nursing, non-standard pharmaceutical administration and other unsafe factors, thus, zero-accident nursing can be better achieved, and better services can be provided for child patients to promote their rehabilitation [16, 17].

Related researches have pointed out that the occurrence of risk events during neonatal ICU treatment is the main factor causing medical disputes, and unsafe factors during nursing care are important causes of risk events [18-20]. At the same time, studies have found that the causes of common nursing risk events in pediatric ICU include personal factors of nursing staff (lack of quality and professional skills), inappropriate nursing skills and methods, inadequate nursing management system, etc. [21-23]. Therefore, comprehensive summarizing related safety factors, taking corresponding preventive measures, and improving nursing management system are needed during nursing care to promote the recovery of child patients. In this study, researchers in study group carried out special nursing care targeted to unsafety factors during nursing. The results showed that the occurrence of risk events in study group was significantly lower than that in control group; meanwhile, the occurrence of adverse reactions in the treatment and the mortality were also greatly lower; the length of stay was significantly shorter.

Studies have also showed that the main reasons of ICU medical disputes between nursing staff and child patients' families are the following: child patients cannot properly communicate with nursing staff for their very young age; their families cannot visit them constantly; their families' medical knowledge is inadequate [24, 25]. The above factors have intensified conflicts between nurses and patients. Doctor-patient relationship can be relieved by improving the quality of nursing staff, and carrying out proper propaganda and education work. Special nursing care was performed in this study, and the satisfaction of newborns' family members in study group was significantly improved than that in control group. However, because of the relatively shorter follow-up and smaller sample size in this study, there might be bias in the results. Further prospective trials with more adequate sample and longer follow-up should be conducted to verify, so that special nursing care for newborns in ICU can be widely popularized in clinic.

To sum up, special nursing care for newborns in ICU can better play the advantages of nursing. It better cures diseases, relieves pain, as well as improves the treatment effect and rehabilitation in newborn patients, so it is worthy of clinical application and promotion.

Disclosure of conflict of interest

None.

Address correspondence to: Xingxia Li, Department of Neonatology, Qilu Hospital of Shandong University, No.107 Wenhua West Road, Jinan 250012, Shandong Province, China. Tel: +86-0531-68697339; Fax: +86-0531-86927544; E-mail: xingxialims86@163.com

References

[1] Johnson PJ. Neonatal pharmacology--pharmacokinetics. Neonatal Netw 2011; 30: 54-61.

[2] Murray NA. Evaluation and treatment of thrombocytopenia in the neonatal intensive care unit. Acta Paediatr Suppl 2002; 91: 74-81.

[3] Umran RM and Al-Jammali A. Neonatal outcomes in a level II regional neonatal intensive care unit. Pediatr Int 2017; 59: 557-563.

[4] Asimakopoulou E and Madianos M. Depression and post-traumatic stress disorder among patients in intensive care units. Psychiatriki 2014; 25: 257-269.

[5] Hughes S, Edward KL and Hyett B. Enhancing nursing practice potential: breast free flap reconstruction following mastectomy. Aust Nurs J 2011; 19: 30-33.

[6] Leontjevas R, Gerritsen DL, Koopmans RT, Smalbrugge M and Vernooij-Dassen MJ. Process evaluation to explore internal and external validity of the "Act in Case of Depression" care program in nursing homes. J Am Med Dir Assoc 2012; 13: 488, e1-8.
[7] Turnbull D, Baghurst P, Collins C, Cornwell C, Nixon A, Donnelan-Fernandez R and Antoniou G. An evaluation of midwifery group practice. Part I: clinical effectiveness. Women Birth 2009; 22: 3-9.
[8] Zhanzeng F, Yurong Z, Chuangang Y, Yunyun J, Xingang W, Zhaofan X and Chunmao H. Basic investigation into the present burn care system in china: burn units, doctors, nurses, beds and special treatment equipment. Burns 2015; 41: 279-288.
[9] Parthasarathi R and Sinha SP. Towards a better health care delivery system: the tamil nadu model. Indian J Community Med 2016; 41: 302-304.
[10] Wassenaar A, Schouten J and Schoonhoven L. Factors promoting intensive care patients' perception of feeling safe: a systematic review. Int J Nurs Stud 2014; 51: 261-273.
[11] Wolf LA, Perhats C, Delao AM, Clark PR and Moon MD. On the threshold of safety: a qualitative exploration of nurses' perceptions of factors involved in safe staffing levels in emergency departments. J Emerg Nurs 2017; 43: 150-157.
[12] Darkwa EK, Newman MS, Kawkab M and Chowdhury ME. A qualitative study of factors influencing retention of doctors and nurses at rural healthcare facilities in bangladesh. BMC Health Serv Res 2015; 15: 344.
[13] Moneke N and Umeh OJ. Factors influencing critical care nurses' perception of their overall job satisfaction: an empirical study. J Nurs Adm 2015; 45 Suppl 10: S45-51.
[14] Edwards JD, Lucas AR, Stone PW, Boscardin WJ and Dudley RA. Frequency, risk factors, and outcomes of early unplanned readmissions to PICUs. Crit Care Med 2013; 41: 2773-2783.
[15] Serfaty A, Crenn-Hebert C, Deprez M, Bertrand M, Chabernaud JL, Joly J, Guillonneau M and Papiernik E. Regionalization of very preterm birth care sites in Ile-de france in 1998. Sante Publique 2003; 15: 491-502.
[16] Maury-Zing C, Navarre E, Cathelin O, Sainton A and Laudet J. Quality of life projects and personalized care projects in geriatric hospitals. Soins Gerontol 2009; 30-32.
[17] Vahedian-Azimi A, Ebadi A, Saadat S and Ahmadi F. Intelligence care: a nursing care strategy in respiratory intensive care unit. Iran Red Crescent Med J 2015; 17: e20551.
[18] Neu J, Scheppokat KD and Vinz H. Medical risk and iatrogenic injury--"accident reports" from the north german schlichtungsstelle (expert panel for extrajudicial claims resolution). Z Arztl Fortbild Qualitatssich 2004; 98: 567-574.
[19] Amalberti R and Brami J. 'Tempos' management in primary care: a key factor for classifying adverse events, and improving quality and safety. BMJ Qual Saf 2012; 21: 729-736.
[20] Arambepola C, Rajapaksa LC, Attygalle D and Moonasinghe L. Relationship of family formation characteristics with unsafe abortion: is it confounded by women's socio-economic status? - A case-control study from Sri Lanka. Reprod Health 2016; 13: 75.
[21] Goltz DE, Baumgartner BT, Politzer CS, DiLallo M, Bolognesi MP and Seyler TM. The american college of surgeons national surgical quality improvement program surgical risk calculator has a role in predicting discharge to post-acute care in total joint arthroplasty. J Arthroplasty 2017.
[22] Ku E, Scherzer R, Odden MC, Shlipak M, White CL, Field TS, Benavente O, Pergola PE and Peralta CA. Patterns of blood pressure response during intensive BP lowering and clinical events: results from the secondary prevention of small subcortical strokes trial. Blood Press 2017; 1-9.
[23] Leclerc J, Blais C, Rochette L, Hamel D, Guenette L and Poirier P. Impact of the commercialization of three generic angiotensin II receptor blockers on adverse events in quebec, canada: a population-based time series analysis. Circ Cardiovasc Qual Outcomes 2017; 10: e003891.
[24] Conn LG, Haas B, Cuthbertson BH, Amaral AC, Coburn N and Nathens AB. Communication and culture in the surgical intensive care unit: boundary production and the improvement of patient care. Qualitative Health Research 2015; 26: 895-906.
[25] Turkelson C, Aebersold M, Redman R and Tschannen D. Improving nursing communication skills in an intensive care unit using simulation and nursing crew resource management strategies: an implementation project. J Nurs Care Qual 2017; 32: 331-339.