Universe Scientific Publishing

ORIGINAL ARTICLE

Qualitative Research on ICU Nurses' Decision-making Process of Implementing Patient's Physical Constraints

Yuesha Lu

Third People's Hospital of Guangchang County, Jiangxi Province, luys@usp-pl.com

Abstract: Objective is to explore the decision-making process of ICU nurses to impose physical constraints on patients. Methods To 12 Name, ICU and Nurses conducted semi-structured in-depth interviews, collated and analyzed the data, and extracted the theme. Results include 11 categories that separate out the theme of the body restraint decision-making process, including risk foresight、 alternative choice、body restraint intention、body restraint implementation、body restraint reflection、body restraint rationalization 6 decision-making stages, patients、nurses、family members、management 4 cause factors, safety 1 result targets. The implementation of physical constraints is a series of complicated decision-making processes, which are affected by many factors. The results of this study can be used to formulate patient's physical restraint intervention measures and related management reference.

Keywords: Critically Ill Patients; ICU; Physical Restraint; The Decision-making Process; Grounded Theory; Qualitative Research

ICU and patients are in critical condition, often accompanied by delirium、restlessness、 unconsciousness. Therefore, ICU and nurses often impose physical restraint on patients (Physical Restraint, PR) to avoid adverse events such as unplanned extubation. However, in fact, physical restraint involves many aspects of the patient's physiology、 psychology、 legal and ethical issues, and previous studies have shown that physical restraint will cause a series of physiological injuries to the patient ［1］ and psychological injuries［2］. Severe cases will lead to fracture、neurogenic injury、asphyxiation or even death ［3-6］. According to the definition of Health Care Financing administration, HCFA, physical restraint refers to “using any physical or mechanical equipment、materials or tools attached to or close to the patients’ body, which cannot be easily removed by the patient, restricting the patients free movement or normal access to his own body ［7］”. As the main decision-maker and implementer of physical restraint, nurses play a key role in the process of physical restraint［2］. In 2014, the US National Database of Nursing Quality Indicators and the US National Quality Forum defined the utilization rate of physical restraint as one of the nursing sensitivity quality indicators ［8］. At present, the international trend of “body restraint reduction action ［9］” has become clear. However, due to the lack of a unified standard for patients to use body restraint in our country, the utilization rate of body restraint remains high ［10］. Therefore, from the perspective of practitioners of physical restraint, this study explores the decision-making process of physical restraint of ICU and nurses under the medical background of our country, with a view to providing reference for standardizing or reducing the use of physical restraint.

1. Objects and Method

doi: 10.18686/jn.v7i2.149

1.1 Object selects ICU and Nurses of a Class III A Hospital in Qingdao as Research Objects by Objective Sampling Method from June to December in 2017. This study has been approved by the hospital authorities. Inclusion criteria: ① With nurse qualification certificate; ② Working in ICU ≥6 Months; ③ Near 1 exercise physical constraints on patients within weeks; ④ Informed consent to this study; ⑤ Able to cooperate with researchers to complete interviews. Exclusion: Trainees and Interns. Pay attention to selecting representative samples in terms of gender、age、education level、marital status、technical title、working years and so on to obtain the required information to the maximum extent. The sample size is determined by repeating the data of the interviewee and no new topics are presented as the standard in the data analysis. Finally, interview 12 ICU nurses , 4 males, 8 females; Aged 24～39, on the average of 31.3 years old; Department: Internal Medicine ICU 4 persons, Surgery ICU 3 persons, Neurosurgery ICU 3 persons, Cardiothoracic Surgery ICU 2 persons; Education: 3 persons with junior college degree, 8 persons with undergraduate degree, 1 person with master degree; Title: 2 persons are nurse, 6 are nurse assistance, 4 are supervisor nurse assistance ; With ICU working years of 2～19 years, on the average of 7.7 years. 3 persons received physical restraint education / train and the other 9 didn't.

1.2 Method

1.2.1 Data collection study adopts observation and semi-structured in-depth interviews to collect data. ① Researchers go deep into clinical practice, participate in the daily work of interviewees, observe and record the implementation of interviewees' physical constraints on patients, and establish a friendly、trust relationship with interviewees to facilitate the smooth conduct of interviews and data mining. ② Researchers consult relevant documents, draw up interview outlines, and revise them according to the feedback results of pre-interview to finally determine the formal interview outlines: Please recall 1 situation involving physical constraints encountered at work and describe your handling process at that time in detail; Under what circumstances do you generally impose physical constraints on patients? Do you discuss with your colleagues、head nurses or doctors before implementing the restriction? Will you explain the reason for the restriction to the patient or family members in advance? How did you tell them? What do you do if the patient does not agree to use the constraint or asks for its release? What problems should patients pay attention to during the restriction period? Apart from using physical restraints, do you think there are any better solutions? Under what circumstances will you release the patient's restraint? What is the basis for cancellation? Do you have any comments or suggestions on physical constraints? The interview place is selected from conference rooms、nurse lounges which are convenient for a talk and undisturbed. Before the interview, introduce the purpose and method of the interview to the interviewee, explain that in order to facilitate the subsequent data collation, it is necessary to record the interview process, and promise that the interview content will only be used for research purposes, and their personal privacy will never be disclosed (the patient's name in the research report is replaced by English letters), and sign the informed consent form. The interview was conducted by 2 researchers, one researcher was responsible for the interview, and the other researcher was responsible for recording. Time for each interview is 30 ~ 60 minutes, and each person will be interviewed for 1～2 times.

1.2.2 After finishing the data sorting and analysis interview, the recorded data will be transcribed into word document within 24 hours. At the same time, it recorded the changes of voice and tone of nurses during the interview, so, two people need to check it after transcription. Apply qualitative analysis software Nvivo11.0 to collate data and extract the theme according to Glazer's traditional grounded theory of open coding、selective coding and theoretical coding strategy: ① To name meaningful data to form codes [11-12], convert codes into concepts, and then classify similar concepts into categories; ② Analyze the relationship between each category in the data and the concepts it belongs to; ③ Finally produce the core category, obtain the theoretical frame. When analyzing the data, the thinking of continuous comparison and the method of writing memos will run through the three-level coding process. To improve the validity of the data and the rationality of the analysis and explanation by using the method of uniting the masses. Finally, the researcher will return the collected data to the interviewee to check the authenticity of the data.

2. Results

Through the initial coding of interview data、conceptualization and categorization, 11 species were separated out. Using the theoretical coding strategy of " cause、through、result " in Glazer's traditional grounded theory [12], the core theme " body constraint decision-making process " is summarized, including 6 decision-making stages, 4 cause elements, 1 result target. See Figure 1.

2.1.1 Before the implementation of the physical constraints for risk prediction, ICU and Nurses will first predict the risks that may occur to patients and evaluate the risks. ① Risk Perception. Due to the severity of the patient's condition and the complexity of the current medical environment, nurses are aware of the risks of medical accidents (such as accidental withdrawal) and the risks of taking medical responsibilities themselves. "The condition of patients in ICU is so serious that once the tube is removed, it can be said that the nurse is the first responsible person …… Not only the patients suffer and their life safety is threatened, but also the nurse will bear certain responsibilities " (nurse A). ② Risk assessment. Nurses mainly evaluate patients' consciousness and the importance of carrying pipelines 2 to judge the risk. "We usually carry out RASS score (restlessness and sedation assessment) and catheter risk assessment in each class. For patients with mechanical ventilation, there are also nasal catheters and PTCD catheters, which are crucial to the treatment of patients. These situations are more dangerous" (Nurse C).

2.1.2 Intention of physical restraint nurses' willingness or motivation to enforce physical restraint on patients after predicting risks, reflects nurses' psychological preparation and possibility of enforcing physical restraint. "When a patient comes, he usually takes a ventilator or some drainage tubes. We usually prepare a restraint belt. If it is really not possible, we will tie to him (patient) " (nurse D). " If I encounter patients whose dysphoria or delirium is very serious、and without drug control, my first reaction is the upper restraint belt " (nurse A).

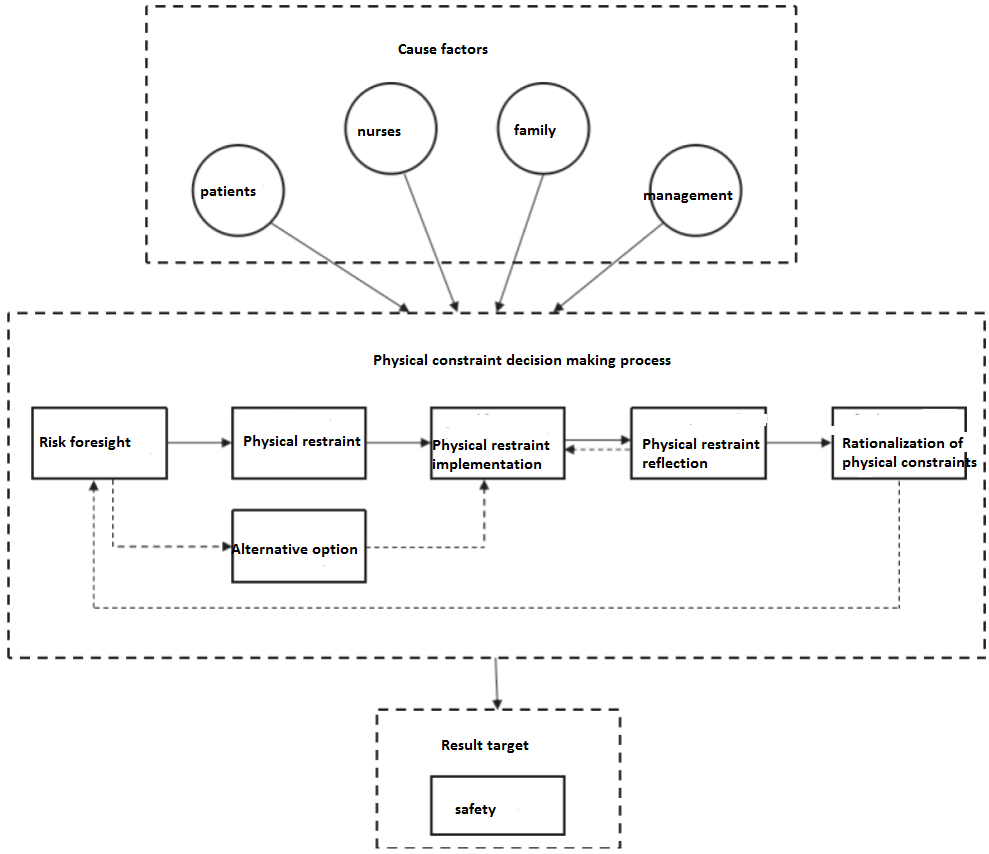

Figure 1. ICU Framework Diagram of Nurse's Body Constraint Decision-making Process

2.1.3 Alternatives are selected when the patient's condition permits, ICU and nurses do not directly implement physical restraint, but first try to take appropriate alternative measures, such as using appropriate sedatives to relieve delirium

or agitation, strengthening nurse-patient communication to emphasize the importance of the carried pipelines and asking family members to help calm the patient's mood. " If the patient is very agitated and we can't do ideological work, we can let family members come in to appease" (nurse C).

2.1.4 Implementation of physical restraint ICU nurses will formally implement physical restraint on patients after forming the intention of physical restraint or when the alternative is invalid. This study summarizes the following 3 characteristics of the implementation of physical constraints: ① Dynamic constraints. The dynamics of physical restraint is reflected in the nurse's appropriately increasing、decreasing、suspending or releasing restraint according to the specific situation of the patient. "We don't always tie him (the patient), for example, every 2 hour, we will help the patient turn over body and knock their back once, at this time, the restraint belt will also be untied …… or the same sentence, the restraint will follow people " (nurse E). ② Humanized restraint, that is, nurses apply humanized methods in the process of body restraint nursing, respect the dignity and autonomy of patients, and protect the physical and psychological integrity of patients. " The patient is also human, right ? We don't mean to say that we don't care if we tie it, …… Most patients don't wear clothes and we need to protect their privacy. And the other things are the functional position of this limb and the degree of restraint " (nurse K). ③ Individualized constraint. For patients with different conditions, the purpose of constraint、constraint site、constraint method and constraint time will be different. "Each patient's situation is different. Some patients can only restrain their hands slightly. As for the very restless patient, he needs to restrain his upper body with a large bill and tie his feet, otherwise he will fall off the bed " (nurse H).

2.1.5 Physical constraint reconsideration ICU Nurses, after implementing physical constraint, will reflect on the process of implementing physical constraint or the outcome of physical constraint. This stage is often integrated with the implementation stage of physical constraint. In this study, all the nurses interviewed said that the use of physical restraints can ensure the safety of patients and prevent the occurrence of unexpected events such as unplanned extubation or bed falling. For the harm of physical restraint, most interviewees believe that the harm can be reduced or even zero through reasonable and correct restraint . "Some patients have very swollen hands, which may be a side effect of restraint. Then we will use pillows to raise his hand a little and loosen the restraint straps" (nurse G).

2.1.6 Rationalization of physical constraints study found that although the nurses interviewed were aware of the harmfulness of physical constraints and related ethical issues, most of them would provide support for their own decisions to prove that the implementation of physical constraints is reasonable, which is in fact to keep their attitudes and behaviors consistent [13]. "This will definitely involve ethical issues. We don't want to restrict it, but we have to restrict it. It is all for the sake of patient safety " (nurse F). ICU nurses, after rationalizing their body restraint behaviors, will re-enter the theoretical framework of the body restraint decision-making process when they perceive risks again, thus making body restraint decisions more easily.

2.2.1 Patient Factors

In this study, ICU nurses mainly consider the disease characteristics of patients before implementing physical constraints. ① Treatment features. The degree of importance of the pipelines carried by patients is an important influencing factor for nurses to make physical restraint decisions. All the nurses interviewed said that patients carrying important tubes (such as thoracic drainage tube、ventricular drainage tube、endotracheal tube, etc.) were more likely to be restrained. In addition, for patients undergoing CRRT (Continuous Renal Replacement Therapy) or ECOM (Extracorporeal Membrane Oxygenation), nurses often use restraint to maintain limb immobilization so that treatment can proceed smoothly. ② Mental state. Researchers found delirium and agitation in patients through interviews are important reasons for nurses to use physical restraint. However, studies at home and abroad show that physical restraint is an independent risk factor for delirium, [14-15], and delirium will lead to the use of physical restraint. ③ Use of sedative drugs. International practice guide for sedative drug management [16] requires minimizing the use of sedative drugs, but potentially increasing the body restraint rate. "The dose of sedatives is limited. Some patients are not sedated well. …… Drugs like benzodiazepines, on the contrary, will lead to delirium of patients. Therefore, we usually restrict preventively" (nurse I).

2.2.2 Nurse Factors

Nurses are the main decision makers and implementers of physical constraints and play an important role in

constraint practice. ① Experience of nurses. Nurses who have experienced adverse events such as accidental extubation are more likely to use physical restraints. " Since this happened (the patient accidentally pulled out the tube), it can be said to be 'Once bitten, twice shy'. I'd rather restrict myself more than risk " (nurse F). ② Nurses' cognition and attitude to physical constraints. Most nurses think that physical restraint is a routine protective nursing measure, and often exaggerate the advantages of restraint while ignoring the harm of restraint, so they prefer to use physical restraint. "I don't think it will cause any harm to the patient. If it happens, it will be a big deal " (nurse L). ③ Nurses' familiarity with patients. The interview found that ICU nurses know less about newly admitted patients and have more constraints, while they have less constraints on familiar patients. "All patients with tubes will be restrained when they come. We will observe the effect …… But there are 1 patient with severe acute pancreatitis. Several drainage tubes will be retained. We have stayed here for 3 to 4 months. We all know that she will not pull out the tubes. She herself knows the importance. There is no need for restraint " (nurse A).

2.2.3 Family Factors

Family members of patients can be said to be decision-makers of physical constraints, because in most cases, the implementation of physical constraints is based on the knowledge and consent of the family members. " When we talk to family members, they generally agree and understand …… They are most concerned about the patient's condition and treatment " (nurse F). However, some patients' families do not understand the physical restraint behavior、distrust and even interfere with treatment, leading to medical disputes. " Some family members don't want us to restrain the patient, so he secretly untied the restraining strap, which eventually led to extubation. " (nurse G)

2.2.4 Management Factors

Management related factors are one of the factors that cannot be ignored in the implementation of physical constraints. ① Education of nurses in departments. In order to ensure the safety of patients, managers often repeatedly emphasize the importance of preventing accidental tube removal. Once tube removal occurs, nurses will face doubts or accusations from managers and patients' families, resulting in nurses' dependence on physical constraints. " When you first entered the department, the teacher first taught you to restrain the patient's hands. Then 'put the facts、reason' will soon be assimilated into " (nurse E). ② Body constraint process or guide. The departments investigated in this study do not have a unified physical restraint nursing process or guidelines. In many cases, nurses make decisions based on their own experience, resulting in inappropriate restraint or prolonged restraint time. ③ Nurse-patient ratio. Most nurses said that the shortage of nurses led to busy work and was an important factor in increasing the use of physical restraints. " If it is one-to-one, any movement of the patient is under your eyes; However, if there is 1 nurse taking care of 2 patients or more, sometimes she can't deal with this situation …… Even when it is a little easier, you can't do well with all " (nurse L).

2.3 Safety is the result of the decision-making process of physical restraint. According to the analysis of interview data, nurses implement physical restraint not only to protect the safety of patients, but also to consider their own career. ① Patient safety. In this study, all the nurses interviewed said that " uses physical restraint to ensure patient safety ". On the one hand, physical restraint can prevent unexpected events such as unplanned extubation to some extent; On the other hand, nurses prevent and reduce the harm caused to patients by physical restraint through continuous monitoring and reasonable restraint. ② Nurse safety. In fact, to protect the safety of patients is also to maintain the occupational safety of nurses themselves. ICU nursing work itself have high risks. Nurses need to carefully implement physical restraint to provide patients with safety、effective physical restraint nursing. " In the current medical environment (shaking his head), we are really worried sometimes. Don't constraint, afraid he unplug tube; Constraint, some patients' families are not happy. We will try our best not to restrict " (nurse G).

3. Discussion

3.1 ICU Significance of Research on Nurse's Physical Constraint Decision-making Process

This research applies grounded theory research methods, through semi-structured in-depth interviews, and in

combination with China's current medical culture background, and according to the open coding、selective coding and theoretical coding strategy［11-12］, the theoretical framework "Physical Constraint Decision-making Process" has been preliminarily constructed. The decision-making process of ICU nurses implementing physical constraints includes risk foresight、intention of physical constraints、alternative choice、implementation of physical constraints、reflection and rationalization of physical constraints 6 stages, while patient factors、nurse factors、 family factors and management factors are potential variables that affect the decision-making process, and the ultimate goal of physical constraints is to ensure patient safety and nurse safety. From the perspectives of ICU nurses ,this study has deeply explored the decision-making process of ICU and nurses' implementation of physical constraints, enriched the theoretical research of physical constraints, provided empirical basis for the follow-up practice of " physical constraint reduction action" and provided reference for nursing managers to take targeted interventions.

3.2 The implementation of physical restraint by ICU nurses is a series of complicated decision-making processes.

The results of this study found that physical restraint is not a simple binding technique, but a series of complicated decision-making processes centered on patient safety, which is consistent with research of Goethals and others'［17］ This study artificially divided the decision-making process of ICU and nurses to implement physical constraints into 6 stages. First of all, ICU nurses need to predict the existence of risks before entering the framework of physical restraint decision-making; Predict that the risk will cause nurses to have the will or motivation to exercise physical restraint; In some cases, nurses do not directly use physical restraint, but try to take alternative measures to physical restraint. When the alternative is invalid, the nurse will put the intention of physical restraint into concrete actions. Next, nurses will reflect on the implementation process or outcome of physical constraints. Finally, nurses will provide support for their physical restraint behaviors to prove their rationality, and when they perceive risks again, they will re-enter the framework of physical restraint decision-making. In previous studies, body restraint decisions were considered as empirical and intuitive decisions［18］. From the perspective of bounded rationality decision-making［19］, this study opens the psychological map of ICU nurses in the process of physical restraint. Due to the complexity of medical environment and the restriction of resource conditions, the ICU nurses show bounded rationality in the process of physical restraint decision-making, that is, they cannot reach the absolute optimal solution, but take the most satisfactory solution as the goal. Physical restraint decision-making is both a thinking process and a behavioral process, which requires nurses to make careful reasoning and critical reflection in order to select the best nursing plan according to the patient's situation and the first-best problem.

3.3 The decision-making process of body restraint is affected by many factors. It regulates the use of body restraint in ICU and the premise of using body restraint is to understand the relevant factors of body restraint. In this study, through interviews with nurses in ICU, the influencing factors of their physical restraint decision-making process are summarized, mainly including patient factors、nurse factors、family factors and management factors. Among them, the patient factor is the most considered factor in the implementation of physical restraint by ICU nurses .Analysis of its causes may be related to ICU and patients are critically ill and recipients of physical restraint. Due to the variability and unpredictability of patients' conditions in ICU, nurses sometimes have no time to reason step by step, which leads to decision-making experience. However, it is far from enough to make high-quality nursing decisions only by relying on one's own clinical experience. Some studies have shown that the application of reduced constraint scheme [20] or directional force evaluation tool [21] can provide a strong basis for the implementation or release of physical constraints. It is necessary for nursing staff to prudently combine the existing evidence-based nursing evidence、clinical experience and patients' wishes to standardize the management practice of physical restraint, so as to improve the quality of nursing service.

4. Summary

This study applies grounded theory research methods to deeply explore the decision-making process of ICU nurses to implement physical constraints, that is, to implement physical constraints ICU nurses is a series of complex decision-making processes, and is influenced by nurses、patients、family members and management factors. The results of the

study can help nursing managers to understand more comprehensively the behavior of nurses in imposing physical constraints on patients, so as to actively formulate targeted intervention programs to further standardize or reduce the use of physical constraints. Shortcomings and prospects of this study: Only the ICU nurses from a Class III A Hospital are studied. The collected data are the subjective cognition of the interviewees, which may have some influence on the objectivity of the results.

Subsequent research can expand the sample size and further refine and perfect the theoretical framework in combination with participatory observation, so as to improve the applicability and guidance of the theory.

References

1. KandeelNA, AttiaAK.Physical restraints practice in adult intensive care units in Egypt［J］.Nurs Health Sci,2013,15(1):79-85.
2. Pan Yanbin, Jiang Zhixia, Zhang Jingjing, etc. Research Progress on Physical Constraint Nurse-patient Experience［J］.Journal of nursing science, 2017,32(20):104-106.
3. Bellenger E,Ibrahim J E,Bugeja L etal. Physical restraint deaths in a13-year national cohort of nursing home residents［J］.Age Ageing,2017,46(4):688-693.
4. Berzlanovich A M,Schpfer J,Keil W.Deaths due to physical restraint［J］.Deutschrztebl Int, 2012,109(3):27-32.
5. Rakhmatullina M,Taub A,Jacob T.Morbidity and mortality associated with the utilization of restraints［J］. Psychiatr Q,2013,84(4):499-512.
6. Bellenger E N,Ibrahim J E,Lovell J J,etal.The nature and extent of physical restraint-related deaths in nursing homes: a systematic review［J］.J Aging Health,2018,30(7):1042-1061.
7. Gallinagh R,Slevin E,Mc Cormack B.Siderailsas physical restraints in the care of older people: a management issue［J］.J Nurs Manag,2002,10(5):299-306.
8. Cui Jinrui, Chen Ying. Research Progress on Quality Indicators of Nursing Sensitivity [J］.Journal of nursing science, 2014,29(12):88-91.
9. Hurlock-Chorostecki C,Kielb C.Knot-So-Fast:a learning plan to minimize patient restraint in critical care［J］.Dynamics,2006,17(3):12-18.
10. Li Liming, Song Baoyun, Lv Huan, etc. Research Progress on Indications for Use of Physical Constraints for Inpatients Abroad [J］.Chinese nursing management, 2014,14(10):1016-1018.
11. Casey · Kamez .Constructing Grounded Theory: A Practical Guide to Qualitative Research [M］.Bian Guoying, Translated .Chongqing: Chongqing University Press, 2016:55-154.
12. Barney G · Glazer.Introduction to Grounded Theory Research: Natural Presentation and Stiffness Contribute [M］. Fei Xiaodong, Translated .Mill Valley: Sociology Press,2009:5-108.
13. Peng Qian, Zhuang Guijun .Effect of Behavior Rationalization on Sales Staff's Grey Marketing Behavior Tendency [J ］. Management Science, 2012,25(1):55-65.
14. Sun Xuan, Wang Rong, Dai Xiuzhen, et al. Nursing care of two types of ICU delirium elderly patients [J]. journal of nursing science, 2012,27(22):36-37.
15. ＲoseL,BurryL,Mallick Ｒ,etal. Prevalence risk factors,and outcomes associated with physical restraint use in mechanically ventilated adults ［J］.J Crit Care,2016,31(1):31-35.
16. Barr J,Fraser G L,Puntillo K,etal. Clinical practice guide lines for the management of pain,agitation,and delirium in adult patients in the intensive care unit［J］. Crit Care Med,2013,41(1):263-306.
17. Goethals S,Dierckx De Casterlé B,Gastmans C. Nurses decision-making process in cases of physical restraint in acute elderly care:a qualitative study［J］. Int J Nurs Stud,2013,50(5):603-612.
18. Li X,Fawcett T N. Clinical decision making on the use of physical rstraint in intensive care units［J］.Int J Nurs Sci,2014,1(4):446-450.
19. Li Guanghai, Chen Tong. The cornerstone of modern decision-making: a review of studies on rationality and bounded rationality [J］.statistics and decision, 2008(3):49-52.

20. Li Jiaxing, Ren Zhijun, Zhang Zijun, et al. .Study on the Effect of Reduction Constraint Scheme on Prevention of
21. Yao Qiujin, Zhang Yi, yu zhang, etc. Application of Orientation Force Assessment in Relieving Physical Constraints of Neurosurgery Intensive Care Unit Patients [J］.Chinese Journal of Nursing, 2017,52(11):1327-1329.