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Designing evidence-based nursing care guidelines for neurosurgical patients in Intensive Care Unit

Fatemeh Taheri [1], Seyyed Mohammad Khademolhoseini [*2], Jamileh Mokhtari Nouri [2]

1. Trauma Research Center Baqiyatallah University of Medical Sciences & Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran

** 2. Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran*

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ABSTRACT

Aims: According to the latest evidences designing and applying nursing cares standards can lead to the best results in increasing quality of care", this study is done with the aim of "designing evidence-based nursing care Guidelines for neurosurgical patients in Intensive Care Unit".

Methods: This evidence-based developmental study was done in neurosurgical ICU of Baqiyatallah Hospital in 2014. At first the quality of six available nursing care Guidelines was evaluated via a standard check list in three levels: good, moderate and weak. Then, the new nursing care Guidelines were designed according to the settler model, evidence-based approach and nursing process. Then their quality was evaluated again. In order to assess content validity of the guidelines through Delphi method, opinions of ten faculty members of Baqiyatallah, Mazandaran, Artesh and Shahid Beheshti Universities had been considered in three refers. Applicability of the guidelines had been assessed by focused group discussion method with the presence of ten experienced experts of Intensive Care Units.

Results: Quality of all 6 available Guidelines was proven to be weak. At the end 26 new evidence-based Guidelines were designed with good quality for neurosurgical patients in ICU.

Conclusions: Considering results of quality evaluation of the available nursing care Guidelines, designing new high quality evidence-based Guidelines is important and necessary for improving quality of nursing care in other wards. Performing these guidelines is recommended in the next studies.

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1. Introduction

Evidence-based nursing is a process in which a nurse can make appropriate clinical decisions by using the available research conditions, his/her clinical skill and the patient's function. The role of nursing care principles, which is established and performed based on evidence-based performance principles and clinical and standard guidelines,

* Correspondence Author: Seyed Mohammad Khademolhoseini
Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran, Kerman, Iran. TEL:+98212228891.
Email: marab@kmu.ac.ir

is very effective in treating diseases and even preventing problems for the patients. Accidents are the main cause of head injuries. Trauma is a triple cause of death. Traumatic brain injuries are actually problematic damages that hurt brain. Annually 200000 people are hospitalized in America because of brain trauma and their health cost is 3.2 billion dollars and nurses who are working in neurosurgical ICU provide the required cares for these patients [1]. Air obstruction and reduced ability to breath (due to lung contusion, severe blows to chest, pneumothorax) also lead to respiratory failure and inadequate oxygen supply to brain and other tissues and its final result is ischemic brain tissue, the point is that the number of patients who underwent surgery and need admission in ICU is increasing every day [2].

Appropriate cares are tools for successful neurosurgery, which is done on the brain and spinal cord. Providing successful cares for neurosurgical patients need excellent collaboration between surgeon and nurses of ICU. The result of a technically successful surgery can be destroyed because of inappropriate nursing cares. A surgery needs intensive cares for correcting homeostatic mechanisms disorders and maintaining brain function. The main aim of post- neurosurgery intensive care is achieving quick treatment of post-surgery complications. The second aim is preventing secondary disorders, which can create or worsen secondary destruction in brain and nervous system [3].

Nursing care role is very important in ICU. Benefiting a high scientific support is one of the most important characteristics for the personnel of ICU and nurses who are not scientifically qualified should not be hired in these units. Since nurses have an important and vital role in taking care of the patients, they should be aware of the latest developments regarding clinical cares and they have to keep their clinical information up-to-date [4].

Nurses are the greatest group that is providing health services and they have an important role in continuity of care, promotion and maintaining health in its different levels [5]. Neurosurgical patients are in critical and instable vital situations and they need frequent and intensive care, nurses of these wards have high experience and knowledge, also they have the required skill for using advanced facilities and equipment and they have a unique and central role in nursing process [6].

Evidence-based nursing is a practical process for using results of the new studies by the nurses in clinical services. Nursing mission in evidence-based method is collecting some documented information and up-to-date knowledge about specific clinical conditions by searching nursing articles. Evidence-based nursing summarizes the best clinical evidences and explains them if enough evidences are not available and the most useful and valuable information is provided for the nurses to take the final decision about their patients.

Evidence-based nursing has been stated as a method for providing health services based on the newest findings and evidences, but the studies and articles which are done in this regard are indicating that nurses have some problems in evidence-based practice. Using evidences in diagnosing, treating and prognosis of diseases in medical science have been emphasized in the recent two decades [7]. Considering educational activities in hospitals, there are many studies that indicate inappropriate quality of nursing cares in different parts of Iran [8]. Also Gibes defined evidence-based nursing as putting patients' benefits in priority through clinical decision-making by using the best evidences in taking care of the patients. By the best evidences we mean evidences that are achieved from repeatable researches that have no bias [9].

Although, there is a long distance from evidences and researches to performance in different levels of nursing cares, this distance is more specific and clearer in nursing area in ICU. Regarding palliative cares or specific cares in ICU especially in neurosurgical ICU nurses have special needs to protocols and valid guidelines to provide high quality cares and

appropriate and ideal services for the patients at high risk. In ICUs such as neurosurgical ICU nurses need to clear and scientific protocols and guidelines for providing nursing cares. Due to the special conditions of this ward and nurses' encountering with critical conditions and especially because of responsibilities that nurses have regarding decision-making about cares, they need scientific guidelines and protocols. It is also necessary in Baqiyatallah hospital to prepare evidence-based and scientific guidelines that can be performed. Therefore, this study is done with the aim of "designing evidence-based nursing care guidelines in neurosurgical patients hospitalized in ICU".

2. Methods

This is a developmental evidence-based study, which is done in neurosurgical ICU of Baqiyatallah hospital in 2014. Developmental study is promotion and development of the available knowledge by using systematic, scientific and justifiable process, which is done in the form of a research. This method is also named guidelines development, in a way that guidelines are designed after a comprehensive study on the new resources and articles and by considering the need of the target group. Since the aim of this study is designing guidelines and then they are going to be assessed and evaluated by the experts and experienced people. This method is used in this study because the aim of this study is also designing guidelines and assessing them by the experts and experienced people [10, 11].

The four stages of Stetler model were used for designing new evidence-based guidelines. The method of conducting this study according to Stetler stages are as the following:

Preparation: this stage includes collecting available guidelines of the ward, available nursing diagnoses of the reference books, articles and nurses' opinions. In this stage, at first the quality of the available six guidelines was evaluated by using Nezamzadeh's checklist in three levels; good, moderate and week. Related nursing diagnoses and detailed review of the texts were done for answering the questions.

Available nursing diagnoses in the ward, available diagnoses in the special reference books and the diagnoses which were considered by the nurses and the head nurses of the ward were also included in order to design clinical questions (based on Pico). Assessing texts was done in the above valid websites according to Pico's acronyms including reviewing all the related articles in order of preference from systematic review, clinical trial, cohort studies, case-control studies and descriptive studies.

Considering inclusion criteria, articles (144 articles chosen from 830 studied articles) and designed guidelines were included the sample size of the study.

Accreditation: in this stage, new guidelines for patients in Intensive Care Units were designed according to evidence-based method and in the framework of nursing process. Experts (faculty members of Baqiyatallah, Tehran, Shahid Beheshti, Military and Mazandaran Medical Sciences Universities) were used through Delphi method and in three stages for determining content validity of the guidelines. In another word, measuring content validity was done by the experts.

Comparative study: this stage includes determining practicality of the guidelines and assessing their benefits and risks. In comparative study, some focus group discussions were held with the presence of the nurses who were responsible for direct care in ICU regarding taking these guidelines into practice. At first designed guidelines were given to ten nurses who were responsible for direct and indirect care in ICU to study them, then, all the interventions were discussed in terms of practicability during a four-hour session; participants' voice was recorded by MP4 in these sessions (their consent was achieved before) and final conclusion was done.

Application: this stage includes the actual determination of the knowledge that should be

Traumatic brain injury
601. Impaired Gas Exchange (NANDA)

Nursing diagnosis
Impaired Gas Exchange related to • Traumatic brain injury

Evaluation criteria
Skin color, lung sounds, O2sat, RR, PR, ABG ،

Nursing interventions

1. Checking the patient regarding airway patency [12-14]
2. Checking the patient in terms of changes in breathing patterns (rate and depth of breathing) [15-19]
3. Auscultation of breath sounds every hour until being stable [17,20]
4. Documenting SPO2 every hour [21-24]
5. Checking the patient's mental and behavioral status [24-26]
6. Checking the patient in terms of secretion [27,28]
7. Controlling arterial blood gasses [29,30]
8. Starting continuous pulse oximetry [18,23,24,31]
9. Oxygen therapy with 8-10 liter venture mask with 2-4 liter nasal cannula and 4-6 liter simple mask [24,27,32-34]
10. Putting the unconscious patient in the lateral position [32,35,36]
11. Elevating the head of the bed to 30 degrees [37-39]
12. Using every therapeutic process only if it was necessary [40,41]
13. Suctioning (cautiously) for less than 15 seconds [33,34]
14. Lung physiotherapy [44,46]
15. Recommending doctor about using sedatives, analgesics [23,42-45]

used and how that knowledge will be taken into practice. Final guidelines for taking care of the patients were prepared to be performed by considering clinical nurses' opinions and by providing guidelines identification and by determining operational codes.

3. Results

Participants in focus group discussions included ten nurses with the age mean of 37±6.5 years old who were working in ICU of Baqiyatallah hospital. Six participants were men and six others were women. One of the nurses had Master degree, eight others had Bachelor degree and another one had associate degree. The mean of nurses' work experience was 14±6.6 years and all the nurses were married. One of the lecturers had Master degree and the other nine ones had PhD. And the mean of educational work experience of the faculty members was 17±5.5 years.

Nursing care guidelines were designed in the framework of nursing process and according to twenty six designed nursing diagnoses. Then the validity of these guidelines was confirmed by searching in the articles (146 articles).
Designed articles included two parts:

1. Guidelines identification: including the aim of designing guidelines, nursing diagnoses, target group, the used methods for setting guidelines, specialists who had participated in designing guidelines, inclusion and exclusion criteria for choosing evidences, rules, used resources and guidelines validity date (to 2020). Nursing specific diagnoses in neurosurgery were determined as the following:

Traumatic brain injury:
601. Impaired Gas Exchange (NANDA)

602. Ineffective Cerebral Tissue Perfusion (NANDA)
603. Deficient Fluid Volume (NANDA)
604. Imbalanced nutrition: Less Than Body Requirements (NANDA)
605. Risk for injury (NANDA)
606. Risk for Imbalanced Body Temperature (NANDA)
607. Risk for Impaired Skin Integrity (NANDA)
608. Disturbed Thought Processes (NANDA)
609. Disturbed sleep pattern (NANDA)
610. Interrupted Family Processes (NANDA)

Intracranial surgery (craniotomy):
611. Ineffective Cerebral Tissue Perfusion (NANDA) .
612. Disturbed Sensory Perception (NANDA) .
613. Disturbed Body Image (NANDA)
614. Ineffective Breathing Pattern (NANDA)

Acute spinal cord injury:
615. Ineffective Breathing Pattern (NANDA)
616. impaired Physical Mobility (NANDA)
617. Risk for Impaired Skin Integrity (NANDA)
618. Impaired urinary elimination (NANDA)
619. Constipation (NANDA)
620. Acute Pain (NANDA)

Brain tumors:
621. Self-care Deficit (NANDA)
622. Imbalanced nutrition: Less Than Body Requirements (NANDA)
623. Anxiety (NANDA)
624. Interrupted family processes (NANDA)

2. The content of the designed guidelines: these guidelines were designed according to nursing process. They included: nursing diagnosis, evaluation criteria and nursing interventions. Since it is not possible to provide all the guidelines in this article, we just talk about one of them (guideline number 601).

4. Discussion

In this study, evidence-based nursing guidelines have been designed and accredited for the patients undergoing neurosurgery and are hospitalized in ICU.

Also Agri standardized tools was used for assessing quality of available guidelines. Stephen Pauls et.al had done their study in 2012. They assessed World Health Organization guidelines about pregnant women health. In this study, World Health Organization guidelines about pregnant mothers' health were assessed and compared by Agri tools, guidelines that were designed in 2011 had better quality in compare with the guidelines of the previous year's [47].

Guidelines of nursing care were designed in the framework of nursing process and according to 24 designed nursing diagnoses. Then validity of these guidelines was confirmed by searching the mentioned qualified articles (144 articles). Scientific opinions of faculty members were also considered for increasing content scientific validity of these guidelines. Executive validity of these guidelines has been determined five years.

Shan Dan Sen et.al provided the process of developing the best evidence-based guidelines for preventing Urinary Tract Infection (UTI) in women with urinary catheter in their study. At first systematic assessment of the studies were done in valid websites and the guidelines with the highest quality were chosen according to evidence-based process.

Then systematic review of the related articles of 1980-2011 was done [48]. In this study, reviewing articles of 2008-2013 was done by using valid websites.

Chapman et.al had done an evidence-based study for providing guidelines of using narcotic drugs in non-cancer pain in America. He brought a group of specialists and experts of this field together and provided some guidelines based on the available evidences [49]. Scientific opinions of the faculty members have also been considered for increasing scientific validity of these guidelines content.

Mack Loud et.al provided the process of developing the best evidence-based guidelines for the nurses in preventing bedsores. At first systematic review of the studies was done by using valid websites and the evidence-based guidelines with the highest quality were selected. It has been pointed out in this study that reviewing guidelines should be done every three to five years [50]. Executive validity of these designed guidelines has been determined five years.

Nezamzadeh et.al in their study, which was done in 2012 designed evidence-based nursing care guidelines for the patients suffering from angina pectoris and they have been accredited by the participation of the nurses working in ICU [51], in the present study, designed instructions were given to 10 chosen clinical nurses working in ICU and their opinions were also considered by holding focus group discussion.

In comparing quality of the designed new guidelines with the available guidelines, all were evaluated in a good level. Studies of Azizi in terms of designing nursing care guidelines were the same as the present study[52].

Toman et.al developed the educational program guidelines of the heart failure patients and their families. In developing these guidelines, they initially reviewed the studies related to taking care of the heart failure patients and they extracted educational programs from them, then they assessed the relationship between education and clinical evidences and they performed it finally [53]. Also in this study, identification was developed for performing guidelines. The method of performance is pointed out in the identification, which is going to be done in the next phase because of some limitations.

5. Conclusions

Considering results of this study, guidelines of the patients hospitalized in ICU do not benefit appropriate quality, also up-to-date resources have been used less for developing care and clinical guidelines. Results of this study are indicating that the available guidelines are not specific and they have low quality and quantity; they are also indicating the necessity of designing appropriate care guidelines. Considering increasing number of the patients of ICU, evidence-based nursing care guidelines can be used as a valid reference in providing nursing services for increasing care quality.

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