

Competency Development for Managing Patient with Mechanical Ventilators based on Caring

Nursalam Nursalam, Tintin Sukartini, Dewi Arini Hidayah

Abstract--- *Caring behavior needs to be applied to treat patients on a mechanical ventilator. Patients with a ventilator have special treatment according to their condition. The development of a caring-based nurse competency is necessary for nurses to provide holistic and competent care. This study aimed to develop management competencies for patients with ventilators based on caring. Research and development (R&D) with a descriptive approach was used. Purposive sampling was used to recruit 101 patients who met the inclusion criteria. The variables in this study were the competency of the management of the patients on mechanical ventilation. An observation sheet was used to gather the data and it was analyzed using descriptive analysis. There were 12 competencies of the nurses for the patients on mechanical ventilation, namely the prevention of Ventilator Acquired Pneumonia (VAP), respiratory physiotherapy, manual ventilation, treatment for restless pain and delirium, catheter care, promoting regular defecation, enteral feeding, parenteral nutrition, early mobilization, skincare, eye care, and communication. The module of competency for patient management based on caring was made according to a Focus Group Discussion (FGD), the study literature, and expert suggestion. The management competencies for patients on mechanical ventilators based on caring were VAP prevention, ventilator assessment, oral care, alarm handling, early mobilization, pain management, restlessness and delirium, and communication in patients on ventilators.*

Keywords--- *Competency development, Patient management, Mechanical ventilation, Caring Swanson*

I. INTRODUCTION

The Intensive Nursing Philosophy is approved by the nursing team. It believes that every patient has needs and that they are entitled to the best nursing services. Nursing services are expected to be able to optimize safety [1]. The care and attention of the nurse encourages the patient's confidence and improves their recovery [2]. In daily nursing practices, care in nursing has not been applied to the patients [3].

The phenomenon that occurs is that the attention and concern of nurses in intensive care critical rooms (ICU) for patients on mechanical ventilation is still lacking. This problem is caused by the complex treatment of patients on a mechanical ventilator (ventilator bundle). Often the nurses only perform routine actions and focus on the physical needs to maintain the patient's physiological stability [4]. Ideally, nurses holistically must pay attention to their psychological, spiritual, and social needs as well [5].

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A preliminary study was conducted at Dr. Soetomo on December 31st 2018, by conducting interviews with the head of the room and with the deputy head of the room as well as drawing on the observations of the field nurses. The implementation of caring in the management of patients on mechanical ventilation in the intensive care room obtained a percentage of non-verbal caring behavior by 39% and verbal behavior by 48%. There was no competency standard in the management of patients on mechanical ventilation in caring-based intensive care. This is seen where the application of caring in the competence of managing patients on ventilation is still very low.

Caring is considered to be human behavior that includes cognitive, affective, psychomotor, and administrative skills, which can be applied to professional care [6]. Caring is an important resource in critical and intensive care units [7]. This behavior describes the work that is inherent and full of nursing values. Nursing is a caring profession and it is an important component of holistic practice, especially with patients with critical conditions [4]. Intensive care also focuses on the social relationships between the nurses, the patients and their families [8]. The concept of caring has been explored extensively in the literature but there is still little clarity in terms of understanding the description, relevance, or caring functions of nursing [3].

In critical nursing practices, the patient management competency with caring-based mechanical ventilation is a caring process concept [9]. This process consists of understanding the meaningful events in one's life, emotional understanding, projecting actions to others, providing information and helping someone to transition into putting their trust in life [10]. Patient management with caring-based mechanical ventilation is expected to make the nurses' performance better and to increase the patient satisfaction with the nursing services. Based on the background, this study aimed to develop management competencies for patients with ventilators based on caring.

II. LITERATURE REVIEW

The literature review of this study was conducted about nursing care to patients with ventilator in hospital. The philosophy in nursing consist of theory that influenced to nursing intervention, because theory can be standart for doing practice. Based on literature study the phenomenon that occurs is that the attention and concern of nurses in intensive care critical rooms (ICU) for patients on mechanical ventilation is still lacking. One of the previous study explained that one of the problem of nursing care is caused by the complex treatment of patients on a mechanical ventilator (ventilator bundle). Often the nurses only perform routine actions and focus on the physical needs to maintain the patient's physiological stability [4]. Ideally, nurses holistically must pay attention to their psychological, spiritual, and social needs as well [5], but in some hospital nursing care is still not adequate, it is supported by research that the human need in patients is not just in physical, but in psychological, social, spiritual and also cultural [4].

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III. DATA COLLECTION

This study used the research and development (R&D) design with a descriptive approach. The variable in this study was the competence in terms of managing the patients on mechanical ventilation observed in 101 patients. The sampling technique used was purposive sampling by establishing the inclusion and exclusion criteria. The inclusion criteria consisted of the patients who were on a ventilator, those who were intubated and those who had had a tracheotomy. The exclusion criteria were patients who had been extubated, where the patient had been moved to another unit and or where the patient had died. The research instrument used was an observation sheet and we analyzed using descriptive analysis. This study protocol was approved by Ethical Commission of Dr. Soetomo Teaching Hospital, Surabaya and the number of certificate was 1250/KEPK/VI/2019.

IV. DATA ANALYSIS

Table 1 shows that the most age group in the data was 21-40 years old at 43.5%. There were more who were of the male sex (51%) than female, while marital status showed that 84.2% of patients were married. The patients who had an endotracheal tube (ETT) installed totaled 93% compared to those using a tracheostomy. Most (65%) patients had undergone a surgical procedure. The number of patients who had ventilators installed for less than one day was 46% compared to the duration of ventilation between 2 to 4 days and more than 4 days respectively. The top three diagnoses are digestive cases by 23%, neuro cases by 22% and neurosurgery cases by 22%.

The study was conducted from 14th June 2019 to 14th July 2019 in Dr. Soetomo hospital. The data was obtained from 101 patients who were on mechanical ventilation. The results of the competency evaluation are as follows. Table 2 shows the observations of the nurses' competencies when carrying out the care of the patients on mechanical ventilation. There are 12 main competencies of care, namely the prevention of VAP, breath physiotherapy, manual ventilation, the management of restless and delirium pain, catheter care, helping the patients to defecate, administering enteral nutrition, providing parenteral nutrition, early mobilization, skin care, eye care and communication with the patients on ventilators. In the VAP prevention competency, there are three competencies, namely the secretion sucking competency, oral care competency and ventilation management (ventilator assessment competency and alarm handling competency). There are eight competency sequences that are most frequently performed by the nurses, namely 95% VAP prevention, consisting of 95% secretion sucking and 95% oral care, ventilation management (ventilator assessment 95% and 95% alarm handling). Other competencies include the management of restless pain and delirium

70%, early mobilization 51% and communication with the patients on ventilators 43%. The researchers chose the endotracheal sucking competency to evaluate so then the nurses caring behavior can be known.

Table 1. Patient Characteristics (n = 101)

No	Characteristics	Data	n	%
1	Age	≤ 20	10	9
		21-40	44	43,5
		41-60	26	25,7
		≥ 61	21	20,7
		Total	101	100
2	Gender	Male	52	51
		Female	49	49
		Total	101	100
3	Marriage status	Marriage	85	84
		Single	16	16
		Total	101	100
4	Duration of ventilation	≤ One day	46	45
		2-3 day	39	39
		≥ Four day	16	16
		Total	101	100
5	Intubation classification	Oral intubation	94	93
		Nasal intubation	-	0
		Tracheostomy	7	7
		NIV	-	0
		Total	101	100
6	Diagnosis	Digestive	23	23
		Neurology	22	21,7
		Neurology surgery	22	21,7
		Obstetric and Gynecology	19	18,9
		Cardiology	9	8,9
		Medic	6	5,9
		Total	101	100

Table 2. Nursing competencies performed in patients with mechanical ventilation (n = 101)

No	Nursing Competencies	n	%
1	Prevention of VAP	96	95
	a. Suctioning	96	95
	b. Oral hygiene	96	95
	c. Ventilation management		
	- Ventilator assessment	96	95
	- Alarm handling	96	95
2	Respiratory Physiotherapy	34	33
3	Manual Ventilation (<i>Bagging</i>)	16	15
4	Parenteral Nutrition	16	16
5	Treatment For Restless Pain And Delirium	71	70
6	Catheter Care	27	26

No	Nursing Competencies	n	%
7	Enteral Nutrition	35	34
8	Promoting Regular Defecation	16	15
9	Early Mobilization	51	50
10	Skincare	21	20
11	Eye Care	13	12
12	Communication	44	43

Table 3 shows the nurses caring behavior in terms of implementing ten times the competency of sucking endotracheal competencies. In terms of the element of maintaining belief, it appears that not all of the nurses introduce themselves before the act of exploration. In the knowing element, 0% of nurses validate the emotional condition of the patient. In terms of being with, only 20% of nurses use the patient's name correctly. Giving touch as needed is only done by 20% of nurses and no nurses try to be beside the patient before and after the action. In the element of doing, only 10% of nurses try to provide a comfortable position before suctioning.

Table 3. Results of evaluating the nurses' caring behaviors when carrying out endotracheal suctioning

Caring Component	Caring behavior	Done		Not done	
		Σ	%	Σ	%
<i>Maintaining belief</i>	Introduce yourself	0	0	10	100
<i>Knowing</i>	Validate the emotional condition of the patient	0	0	10	100
	Validate the condition of their vital signs	7	70	3	30
<i>Being with</i>	Call the patient's name correctly	2	20	8	00
	Maintain eye contact	6	60	4	40
	Give touch as needed	2	20	8	80
	Stay beside the patient's bed before and after the procedure	0	0	10	100
	Respond to the patient complaints during their actions	6	60	4	40
<i>Doing for</i>	Provide comfort (position)	1	10	9	90
	Maintain patient privacy	5	50	5	50
<i>Enabling</i>	Explain the procedure of the action	8	80	2	20

Table 4 shows an overview of the VAP prevention competencies based on the caring elements: maintaining beliefs is listed in items 1-3, knowing is in items 4-8, being with is in items 9-12, doing is items 13-25 and enabling elements is in items 28- 30.

Tabel 4. Competency for VAP Prevention

Nursing Intervention	Caring Elements
1. The nurse introduces themselves before observation	<i>Maintaining belief:</i>
2. Convince the patients and their families to participate in VAP prevention measures.	
3. Nurses maintain the role of advocates and provide support in the implementation of VAP prevention.	
4. Assess the risk of VAP.	<i>Knowing</i>
5. Assess the equipment needed for VAP prevention	
6. Assess via an examinations for VAP prevention: body temperature, secretions and secret production, the results of an x-ray of the thorax, laboratory results, physical inspection, palpation, percussion and auscultation.	
7. Knowing the patient's or family's response to VAP prevention provides an understanding if the patient feels anxiety / fear / shame.	
8. Assess the psychosocial needs of the patients and their families (health education related to VAP prevention).	<i>Being with</i>
9. Identification.	
10. Perform verbal and non-verbal communication.	
11. Pay attention to the patient's vital signs and emotions.	
12. Discuss the plans that will be carried out if there are problems felt by the patient.	

	<i>Doing for</i>
13. Installation of artificial airways	
a. Hand washing.	
b. Suctioning of the secretions in the mouth and oropharynx before the installation of a cannula or ETT.	
c. Choose a cannula or tube with a cuff that has a high volume and low pressure.	
d. Head positioned as needed.	
e. Fixation of the ETT cannula and tracheostomy with adhesive tape for stable fixation done every shift.	
f. Record the depth of the ETT at the tip of the mouth.	
g. Checking the ETT / tracheotomy cuff pressure ranges from 20-30 cmH ₂ O three times a day.	
h. Minimize the tensile strength of the fixation from the ventilator circuit in the upper buffer, use a flexible cantilever during changing positions, sucking out the secretion, or reconnecting it to the ventilator.	
i. Checking the depth of 2-4 cm ETT above the carina by looking at the results of the thorax x-ray image.	
14. Managing artificial ventilation:	
a. Prevent ETT from being bitten with an anti-bite device	
b. Provides 100% humidity from inhaled air, oxygen or gas.	
c. Maintaining adequate systemic hydration through the intake of oral or intravenous fluids.	
d. Checking the cuff after giving general anesthesia or manipulating the patient	
e. Conduct secretions as needed, maintain sterile techniques and provide care in artificial ventilation by monitoring the color, amount and consistency of aspirated secretions.	
f. Do the suction before removing the cannula (ETT, tracheostomy tube)	
g. Perform oral hygiene every 8 hours	
h. Monitor for crepitus or snoring breath sounds	
i. Monitor the decreased expiratory volume and increased inspiratory pressure in patients on a ventilator	
j. Apply steps to prevent spontaneous extubation or the disconnection of the cannula from the air circuit (provide a circuit buffer with tape or rope, provide sedation and medication for muscle relaxants)	
15. Airway management:	
a. Position the patient so then he can get maximum ventilation	
b. Cleanse the patient's secretions so then they can cough and remove the secretions themselves	
c. Encourage the patient to take a deep breath and then to slowly cough.	
d. Give bronchodilators and aerosols as directed by your doctor if needed	
e. Perform chest physiotherapy if needed.	
f. Monitor respiration and oxygenation	
g. Check breathing by listening, note the areas with reduced or no ventilation at all and the presence of different sounds	
16. Suctioning	
a. Follow the general steps for suctioning that are standardized	
b. Use protective equipment (gloves, goggles, masks)	
c. Tell the patient / family about exploitation	
d. Check for pain	
e. Do a secret check	
f. Perform a breathing evaluation before and after suctioning	

17. Help the patient to sit or position the patient's head at 45° to prevent gastroesophageal reflux	<i>Doing for</i>
a. In head trauma / brain trauma, the head height should be 30°	
b. In patients with or where there is suspected spinal trauma, raise the whole body position by 30 °	
c. In patients with cardiovascular conditions that are very unstable, they are given the maximum head position according to the conditions that can be applied.	
d. In patients with continuous lateral therapy, the maximal head position is given according to the conditions that can be applied	
18. Enough gas humidification	
a. The engine humidifier is turned on and the temperature is checked	
b. Use a heat-moisture exchanger (HME) and heated humidifier (HH)	
a. Consider administering a nebulizer if the secretion is very thick / sticky or if the use of HME / HH is not possible. Aerosol inhalation is given every 4 hours, 6 hours, or 8 hours	
19. Reducing the provision of sedation to reduce the use of ventilators, stopping sedation (if possible) unless contraindicated, seductive analgesics given until the patient can obey simple orders or when they are uncomfortable or anxious.	
20. Provision of DVT (Deep Vein Thrombosis) prophylaxis to critically ill and immobilized patients except in patients with head trauma, intracranial hemorrhage and coagulopathy (APTT > 1.5. INR > 1.5, platelets < 50, active bleeding, administration of heparin or warfarin anticoagulants).	
21. Prophylactic administration of drugs to prevent gastric ulcers: Ranitidine, Omeprazole, Lanzoprazole (injection, orally or through a sonde tube).	
22. Provision of antibiotic prophylaxis.	
23. Management of ventilation tubing	
a. Replace if it looks dirty and damaged	
b. Prevents water condensation from entering the patient's airway	
24. Enteral NG tube / NJ tube nutrition, parenteral (peripheral or central infusion).	
25. Check BGA analysis: pH, paO ₂ , pCO ₂ , K ⁺ , Na, Ca ²⁺ , Lactate.	
26. Exercise and mobilization: done or not, if done every 4 hours, 6 hours, or 8 hours, right and left tilting and clapping.	
27. Isolate the patient: by replacing gloves (handscoon) or by practising hand hygiene.	
28. Provide information to the patients and their families about infection prevention measures and any plans that must be undertaken during treatment	<i>Enabling</i>
29. Provides information on the importance of avoiding VAP to accelerate ventilation release.	
30. Make sure that the patient and their family understands the infection prevention procedure	

Competency Development in the Management of Patients on Mechanical Ventilation

Development is carried out in several stages. In the first stage, the following activities are carried out. 1). Focus Group Discussion (FGD). The FGD activity was carried out to add information to the researchers' knowledge about the competence related to managing patients on mechanical ventilation in the view of the nurses in intensive care services of RSUD Dr. Soetomo Surabaya. This is at the same time as the basis for compiling patient management competencies with caring-based mechanical ventilation following the participant expectations. The discussion was attended by 15 participants consisting of the head of the nursing team totaling 7 people and 8 people from the management level. 2) The literature study was carried out using the Scopus and Science Direct databases. The keywords used were nursing management, patients on mechanical ventilation, caring and mechanically-ventilated

patients. 3) Expert discussion was conducted to obtain input from the results of the field studies, FGDs, and research literature studies that have been carried out and incorporated into the competence of patient management with caring-based mechanical ventilation. The expert discussion activity was held on July 12th, 2019 and it was attended by two experts, namely an intensive care nurse and an anesthetist specialist consultant.

Arrangement of the modules

The eight competencies most frequently performed by nurses are taken for discussion, namely the VAP prevention competencies which include endotracheal suctioning competencies, oral care competencies and ventilation management (ventilator assessment competencies, alarm overcoming competencies). In addition, there are the competencies in the management of restless pain and delirium, paired with communication competencies in patients on ventilators and early mobilization competencies. In the eight components of competence, Swanson's caring elements are related to maintaining belief, knowing, being with, doing for and enabling. This is because in Dr. Soetomo Surabaya, such a guide does not yet exist. The VAP prevention module can be seen in Table 4 below.

V. STUDY RESULTS, SUMMARY AND CONTRIBUTION

The treatment of the patients on mechanical ventilation includes suction, eye and mouth care, bacteria elimination, changing the bodily position, physiotherapy, and the physiological effects of ventilation [11]. Ventilation assessment, pain management, nutrition, alarm management, and VAP prevention is also included in the treatment of patients on mechanical ventilation [12]. There are various competency assessment models that have been developed in the 1990s and these are widely accepted as models for professional nursing in critical care. The American Association of Critical-Care Nurses (AACN) synergy model for patient care focuses on achieving optimal patient outcomes by adjusting the nursing competencies to the patient characteristics. This is based on the patient needs and how they should direct the characteristics and competencies of the nurses. Nurse surveys in special fields can also be used to identify the applicable competencies [1].

Caring is related to the appreciation of others for someone who has commitment and personal responsibility. Caring is at the core of the nursing phenomena (Swanson's caring theory, 1993: p.354). Caring behavior can be demonstrated by showing the patients that the nurses are always there for them [6]. To spend time with the patients and talking about their illness provides a touch that can calm the patient. Understanding the conditions and situations of others in the intensive room is the key to caring behavior for both the patients and the patient's family. This can be categorized as an example of being with the patient and the information provided by the patients can contribute to knowing. These processes, based on the culture of maintaining belief, combine with the compassion of nursing, namely (knowing and being with) competence (doing for and enabling), which leads to the expected results of improved healing and a better well-being of patients [13].

VAP prevention competencies are activities carried out by nurses in an effort to prevent the occurrence of VAP. VAP prevention includes head elevation of 30-45°, the suctioning of endotracheal mucus, the administration of ETT cuff pressure 20-30 cmH₂O and oral care with 0.12% chlorhexidine [3] Restricting the use of mechanical ventilation, preventing the aspiration of secretions, preventing nasal cuff pressure 20-30 cmH₂O, oral care with 0.12% chlorhexidine pharynx, preventing the use of contaminated respiratory equipment, early mobilization, hand hygiene and PPE compliance, 48-hour HME filter replacement, 72-hour closed sucking and moisturization if there are thick secretions are all important [14]. The provision of drugs to prevent gastric ulcers and DVT is also applied [15].

There are 2 methods of endotracheal suctioning based on the choice of the catheter: open and closed. The sequence of activities begins with the preparation of the tools and patient, followed by implementation and the evaluation of actions [16]. Patients on mechanical ventilation should be routinely assessed for rough cracks over the trachea, which is the most common indicator for endotracheal suctioning. Lung sound assessment is used to identify their aspiration requirements [17].

The ventilation assessment includes the modes of ventilation, namely the target volume (CMV, VCV, A / C, SIMV), target pressure (PSV, PCV), Synchronized Intermittent Mandatory Ventilation (SIMV), Continuous Positive Airway Pressure (CPAP), PEEP and oxygen saturation (SpO₂). The psychological changes that occur in the patient when the ventilation is attached include the words "scary," "worried," "helpless," "depressed," and "terrible" used to describe breathing difficulties, tachypnea, anxiety, anxiety, the use of the accessory muscles in the neck, tracheal traction, FiO₂, peak pressure, peak inspiratory pressure (PIP) I: E ratio, alarm setting, flare (nasal widened) paradoxical movements of the abdominal wall during inspiration, hypertension or hypotension and decreased blood pressure in the arterial oxygen saturation [18].

Oral care competencies are the activities carried out by brushing the teeth in each quadrant, namely upper right, upper left, lower right, lower left, tongue and the gums by brushing in each quadrant five times, rinsing with water, chlorhexidine 0.12% or 0, 2% mouthwash in each quadrant of the teeth, tongue and gums for 30 seconds. A residual rinse suction of the mouth with a suction hose should then be performed [19].

Competence in handling alarms is by taking action when an alarm occurs. Several causes are a high pressure alarm and an low pressure alarm, apnea alarm [20]. There is also the low exhaled tidal volume, alarm sounds, low inspiratory pressure (inspiration), disconnect alarm, vent inop (ventilation cannot be operated), when the air intake alarm is blocked and a fan failure alarm [21].

A pain, anxiety and delirium assessment should be routinely carried out in the ICU. The BPS and CPOT room is the most valid tool for pain assessment. For restless patients one should use RASS and SAS while for delirium patients, one should use CAM-ICU and ICDSC (22). Competence in terms of handling pain, anxiety and delirium is done by assessing the pain, sedation and delirium, treating the pain 30 minutes after patient orientation every day and involving them in as much conversation as possible, in addition to non-verbal communication / limb movements and facial expressions [21].

The time for the start of early mobilization can vary between 24 - 72 hours from the time that the patients begin to be on mechanical ventilation in the ICU to where the patients can move using their own muscle strength and control [23]. Its activities include passive mobilization activities, the range of motion assistance, stretching, reversing and repositioning in bed. There is also tilt table therapy, special beds and a passive cycle ergometer (neuromuscular

electrical stimulation). Active mobilization activities include participating in cycles in bed, doing exercises in bed such as weights or cycling in bed, inspiring muscle exercises / breathing exercises, sitting exercises and / or balancing by standing beside the bed, moving to a chair and standing beside bed [24]. Many methods can be used to communicate, including movements, head nodding, saying words, writing, using letters / drawing boards and general words or phrases that are tailored to meet the needs of individual patients. Alternative high-tech communication devices are available for more complex cases. Various options for patients with tracheostomy tubes include deflation and the use of partial or total cuffs of the speaking valve. It is important for nurses to assess their communication needs, recognizing the appropriate alternative communication strategies and creating tailored treatments planned with the patient, the patient's family and other team members [25].

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II. REFERENCES

- [1] Bridges DR, Davidson RA, Odegard PS, Maki I V., Tomkowiak J. Interprofessional collaboration: Three best practice models of interprofessional education. *Med Educ Online*. 2011;16(1).
- [2] Carlson EB, Spain DA, Muhtadie L, McDade-Montez L, Macia KS. Care and caring in the intensive care unit: Family members' distress and perceptions about staff skills, communication, and emotional support. *J Crit Care*. 2015;
- [3] Carlson EB, Spain DA, Muhtadie L, McDade-Montez L, Macia KS. Care and caring in the intensive care unit: Family members' distress and perceptions about staff skills, communication, and emotional support. *J Crit Care*. 2015;30(3):557–61.
- [4] Ebrahim M, Dahshan A El, Diab GM. Holistic Nursing Care As Perceived By Nurses Working In Wards and Critical Care Units at Menoufiya University Hospital. *IOSR J Nurs Heal Sci Ver II*. 2015;
- [5] Akbari Lakeh M, Shamsi Gooshki E, Abbasi M. SPIRITUAL HEALTH IN THE PROGRAM OF MEDICAL SCIENCE EDUCATION. *Med ETHICS*. 2011;4(14):113–30.
- [6] Andersson EK, Willman A, Sjöström-Strand A, Borglin G. Registered nurses' descriptions of caring: A phenomenographic interview study. *BMC Nurs*. 2015;14(1).
- [7] Nascimento KC do, Erdmann AL. Understanding the dimensions of intensive care: transpersonal caring and complexity theories. *Rev Lat Am Enfermagem*. 2009;17(2):215–21.
- [8] Ganz FD. Improving family intensive care unit experiences at the end of life : Barriers and facilitators. 2019;2019721.
- [9] Republic C. REVIEW CONCEPT CARING IN NURSING Lenka Drahošová , Darja Jarošová. 2016;7(2):453–60.
- [10] Grobbel CC, Rowe L. Exploring Pre-Nursing Students ' Perceptions of Caring and Nursing: A Phenomenological Study. 2014;(April 2019).
- [11] Ahern RL, Corless IB, Davis SM, Kwong JJ. Infusing swanson's theory of caring into an advanced practice nursing model for an infectious diseases anal dysplasia clinic. *J Assoc Nurses AIDS Care*. 2011;22(6):478–88.
- [12] Hruska P. Early Mobilization of Mechanically Ventilated Patient. Vol. 28, *Critical Care Nursing Clinics of North America*. 2016. p. 413–24.

- [13] Barr J, Fraser GL, Puntillo K, Ely EW, Gélinas C, Dasta JF, et al. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Crit Care Med*. 2013;41(1):263–306.
- [14] Micik S, Besic N, Johnson N, Han M, Hamlyn S, Ball H. Reducing risk for ventilator associated pneumonia through nursing sensitive interventions. *Intensive Crit Care Nurs*. 2013;
- [15] Malouf-Todaro N, Barker J, Jupiter D, Tipton PH, Peace J. Impact of enhanced ventilator care bundle checklist on nursing documentation in an intensive care unit. *J Nurs Care Qual*. 2013;
- [16] American Association for Respiratory Care. AARC Clinical Practice Guidelines. Endotracheal suctioning of mechanically ventilated patients with artificial airways 2010. *Respir Care*. 2010;
- [17] Urrutia-Pereira M, Mocellin LP, de Oliveira RB, Simon L, Lessa L, Solé D. Knowledge on asthma, food allergies, and anaphylaxis: Assessment of elementary school teachers, parents/caregivers of asthmatic children, and university students in Uruguaiiana, in the state of Rio Grande do Sul, Brazil. *Allergol Immunopathol (Madr)*. 2018;
- [18] Garrett KM. Best Practices for Managing Pain, Sedation, and Delirium in the Mechanically Ventilated Patient. Vol. 28, *Critical Care Nursing Clinics of North America*. 2016. p. 437–50.
- [19] Prendergast V, Kleiman C, King M. The Bedside oral exam and the barrow oral care protocol: Translating evidence-based oral care into practice. *Intensive Crit Care Nurs*. 2013;
- [20] Grossbach I, Chlan L, Tracy MF. Overview of mechanical ventilatory support and management of patient- and ventilator-related responses. *Crit Care Nurse*. 2011;31(3):30–44.
- [21] **Received: 10 Nov 2018 | Revised: 20 Dec 2018 | Accepted: 02 Jan 2019** **19**
- [22] *International Journal of Psychosocial Rehabilitation*, Vol. 23, Issue 01, 2019 ISSN: 1475-7192
- [23] Deye, N., Vincent, F., Michel, P., Ehrmann, S., Da Silva, D., Piagnerelli, M., ... Laterre, P.-F. (2016). Changes in cardiac arrest patients' temperature management after the 2013 trial: Results from an international survey. *Annals of Intensive Care* 6(1). <http://doi.org/10.1186/s13613-015-0104-6>, Al-Hussaini, M., & Mustafa, S. (2016). Adolescents' knowledge and awareness of diabetes mellitus in Kuwait. *Alexandria Journal of Medicine*, 52(1) 61–66. <http://doi.org/10.1016/j.ajme.2015.04.001>, Pollach, G., Brunkhorst, F., Mipando, M., Namboya, F., Mndolo, S., & Luiz, T. (2016). The "first digit law" – A hypothesis on its possible impact on medicine and development aid. *Medical Hypotheses*, 97 102–106. <http://doi.org/10.1016/j.mehy.2016.10.021>, Asiedu, K., Kyei, S., Ayobi, B., Agyemang, F. O., & Ablordeppay, R. K. (2016). Survey of eye practitioners' preference of diagnostic tests and treatment modalities for dry eye in Ghana. *Contact Lens Anterior Eye*, 39(6) 411–415. <http://doi.org/10.1016/j.clae.2016.08.001>, Barakat, K. H., Gajewski, M. M., & Tuszyński, J. A. (2012). DNA polymerase beta (pol β) inhibitors: A comprehensive overview. *Drug Discovery Today*, 17(15–16) 913–920. <http://doi.org/10.1016/j.drudis.2012.04.008>, Mocan, O., & Dumitraşcu, D. L. (2016). The broad spectrum of celiac disease and gluten sensitive enteropathy. *Clujul Medical*, 89(3) 335–342. <http://doi.org/10.15386/cjmed-698>, et al. Cultural norms, knowledge and attitudes regarding abortion in rural Ghana. *Ann Glob Heal*. 2015;
- [24] Nascimento KC do, Erdmann AL. Comprender las dimensiones de los cuidados intensivos: La teoría del cuidado transpersonal y complejo. *Rev Lat Am Enfermagem*. 2009;17(2):215–21.
- [25] Prendergast V, Kleiman C, King M. The Bedside oral exam and the barrow oral care protocol: Translating evidence-based oral care into practice. *Intensive Crit Care Nurs*. 2013;29(5):282–90.
- [26] Hruska P. Early Mobilization of Mechanically Ventilated Patient. *Critical Care Nursing Clinics of North America*. 2016.
- [27] Barr J, Fraser GL, Puntillo K, Ely EW, Gélinas C, Dasta JF, et al. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit: Executive summary. Vol. 70, *American Journal of Health-System Pharmacy*. 2013. p. 53–8.

