Journal of Nursing
UFPE On Line
ISSN: 1981-8963

J Nurs UFPE on line.
2020;14:e242958
DOI: 10.5205/1981-8963.2020.242958
https://periodicos.ufpe.br/revistas/revistaenfermagem

ORIGINAL ARTICLE

GOOD NURSING PRACTICES FOR PATIENTS UNSING MECHANICAL VENTILATION*

BOAS PRÁTICAS DE ENFERMAGEM A PACIENTES EM USO DE VENTILAÇÃO MECÂNICA

BUENAS PRÁCTICAS DE ENFERMERÍA PARA PACIENTES CON VENTILACIÓN MECÁNICA

Carolina Papa Pazos [1], Francisco Mayron Morais Soares [2], Luana Cordeiro Barroso[3], Gustavo Mitsuo Cavalcante de Sousa[4], Gabriel Italo da Silva Rodrigues[5], Kirley Kethellen Batista Mesquita[6], Julyana Gomes Freitas[7], Italo Rigoberto Cavalcante Andrade[8]

ABSTRACT

Objective: to identify nursing care for patients on mechanical ventilation. ***Method:*** this is a quantitative, descriptive and cross-sectional study with patients on mechanical ventilation admitted to the Intensive Care Center, divided into surgical and clinical. For data analysis, the Statistical Package for Social Science program (version 20) was used. ***Results:*** it is revealed, as for nursing care, that keeping the head up to 30º was the most found in 77.9% of cases, and checking TOT or TQT positioning was the least found, reaching 61.9% of the cases. prescriptions. ***Conclusion:*** it is concluded that there is still a need to organize the team in the implementation of the prescribed interventions for the patient using mechanical ventilation, thus reducing the length of stay, complications and infections, and weaning to occur. a shorter time. ***Descriptors***: Respiration, Artificial; Nursing; Nursing Care; Critical Care; Intensive Care Units; Nursing, Practical.

RESUMO

Objetivo*:** identificar os cuidados de enfermagem a pacientes em uso de ventilação mecânica. ***Método: trata-se de um estudo quantitativo, descritivo e transversal, com pacientes em uso de ventilação mecânica internados no Centro de Terapia Intensiva, divididos entre cirúrgicos e clínicos. Utilizou-se, para a análise dos dados, o programa *Statistic Package for Social Science* (versão 20). ***Resultados:*** revela-se, quanto aos cuidados de enfermagem, que manter a cabeceira elevada a 30º foi o mais encontrado, em 77,9% dos casos, e checar posicionamento do TOT ou TQT foi o menos encontrado, atingindo 61,9% das prescrições. ***Conclusão:*** conclui-se que ainda é necessário que haja organização da equipe na implementação das intervenções prescritas para o paciente em uso de ventilação mecânica para que, assim, se diminuam o tempo de internação, as complicações e as infecções, e o desmame ocorra em um tempo menor. ***Descritores*:** Respiração artificial; Enfermagem; Cuidados de Enfermagem; Cuidados Críticos; Unidades de Terapia Intensiva; Enfermagem Prática.

RESUMEN

Objetivo: identificar los cuidados de enfermería para pacientes con ventilación mecánica. ***Método:*** este es un estudio cuantitativo, descriptivo y transversal con pacientes en ventilación mecánica ingresados en el Centro de Cuidados Intensivos, dividido en quirúrgico y clínico. Para el análisis de datos, se usó el programa *Statistic Package for Social Science* (versión 20). ***Resultados:*** se revela, en cuanto a la atención de enfermería, que mantener la cabeza a 30º fue lo más encontrado en el 77.9% de los casos, y verificar el posicionamiento del TOT o TQT fue el menos encontrado, llegando al 61.9% de los casos, de las prescripciones. ***Conclusión:*** se concluye que todavía es necesario organizar al equipo en la implementación de las intervenciones prescritas para el paciente utilizando ventilación mecánica, reduciendo así la duración de la estadía, las complicaciones e infecciones y el destete en un tiempo más corto. ***Descriptores***: Respiración Artificial; Enfermería; Atención de Enfermería; Cuidados Críticos; Unidades de Cuidados Intensivos; Enfermería Práctica.

[1,2,3,4,5,6,7,8] University of Fortaleza/UNIFOR, Fortaleza (CE), Brazil. [1] https://orcid.org/0000-0002-9374-3369 [2] https://orcid.org/0000-0001-7316-2519 [3] https://orcid.org/0000-0002-7351-2002 [4] https://orcid.org/0000-0003-4990-402X [5] https://orcid.org/0000-0002-2272-2704 [6] https://orcid.org/0000-0002-6459-3656 [7] https://orcid.org/0000-0002-5405-1028 [8] https://orcid.org/0000-0002-9690-4666

*Article extracted from Course Conclusion Work << Nursing care for critically ill patients >>. University of Fortaleza. 2018.

How to cite this article

Pazos CP, Soares FMM, Barroso LC, Sousa GMC de, Rodrigues GIS, Mesquita KKB, *et al*. Good nursing practices for patients on mechanical ventilation. J Nurs UFPE on line. 2020;14:e242958 DOI: https://doi.org/10.5205/1981-8963.2020.242958

INTRODUCTION

It is known that the Intensive Care Center (ICU) is a complex care sector that aims to treat differently with patients who need specific and careful assistance, aiming at their clinical improvement. Different ICU treatments are available to users, especially life support through Mechanical Ventilation (MV) to maintain the balance between gas exchange, oxygen demand and supply.

Therefore, it is considered that MV is a non-curative way of providing support to patients with alterations in respiratory functions, with probable hemodynamic repercussions and functional complications.[1]

By improving gas exchange and reducing respiratory effort, MV can be used non-invasively, usually by means of a face mask and invasively by means of an orotracheal tube or tracheostomy tube. When used invasively, modalities that divide the MV, classifying it according to the patient's clinical status, can mention the assisted-controlled volume or pressure (VCV/PCV), pressure ventilation modes. (PSV), Synchronized Intermitent Mandatory Ventilation (SIMV) and Continuous Airway Pressure (CPAP).[2]

Therefore, it is explained as routine ICU, that are present the care provided by the Nursing team, among them, the assistance to the patient in MV, ranging from care with the orotracheal tube or tracheostome to the management with respirators. In addition, nursing care aims to prevent possible complications that may arise from the use of technology with patients.[3]

Considering the high rate of patients using mechanical ventilation, the preparation of nurses to provide specific care with qualifications regarding monitoring of ventilatory parameters and hemodynamic conditions is essential. The nurse needs to understand the functioning of the ventilator, as well as its functions and the possible complications that may be caused by it. When checking the ventilator, the professional should check the type of ventilator, its modalities and ventilatory parameters, as well as the good functionality of the ventilatory circuit.[4]

Nursing care is a pertinent action to the Nursing team, which should be developed daily, ensuring that each patient, within their clinical condition, has an effective treatment, considering the importance of the practice of care provided to the modalities. mechanical ventilation and how necessary they are within the intensive care center, making such study relevant.

It is believed that, in this context, it is important that the nursing professional is trained to deal with all situations presented in the intensive care center, especially in ventilator handling, and specific care for patients using MV.

OBJECTIVE

- To identify nursing care for patients on mechanical ventilation.

METHOD

This is a quantitative, descriptive and cross-sectional study at the Fortaleza General Hospital, Fortaleza (CE), Brazil. The study population consisted of patients admitted to the Intensive Care Center (ICU) of the hospital, divided into surgical and clinical, with 38 beds.

The study sample included all critical clinical and surgical patients on mechanical ventilation who were hospitalized during the collection period. Patients younger than 18 years old, those with reserved diagnosis or incomplete medical records, as well as patients who were not using mechanical ventilation were excluded.

Data was collected from August to September 2017, through a semi-structured script, during the consultation of the hospitalized patient's record at the time of collection. Consent terms were signed by the patient's guardian. It is proposed by the script used to investigate the sociodemographic characteristics and data related to hospitalization.

The instrument also includes ventilatory parameters, hemodynamic parameters and nursing interventions prescribed and checked on the day of collection. Sixty-seven patients were included in the study, comprising 113 prescriptions, which covered hemodynamic, ventilatory parameters and nursing interventions prescribed for the patient.

Data was analyzed using the Statistical Package for Social Science - SPSS (version 20). The descriptive classification variables are presented in the form of tables containing the absolute (n) and relative (%) frequencies and, for the correlation of categorical variables, the chi-square test ($p < 0.05$) was used.

The project complied with the ethical principles that govern research with human beings, strictly respecting them from the beginning of the research, from the researcher's primary contact with the study scenario until its conclusion, as recommended by Resolution No. 466/12 of the National Health Council, and the project was then sent to the CEP of that institution.

The Depositary Term was completed for data collection during the consultation of the medical records, as well as the application of the Free and Informed Consent Term (FICT) to the family member responsible for the patient, since all were unconscious or sedated. This research was approved by the Ethics and Research Committee of the General Hospital of Fortaleza under protocol number 1,718,575.

RESULTS

The study evaluated 113 Nursing prescriptions of 67 patients admitted to the research ICU and, considering the sociodemographic characteristics of people admitted to the intensive care center, using mechanical ventilation, the age ranged from 22 to 91 years. , with a mean of 55 years and standard deviation of 15.

Regarding gender, there was a prevalence of females, with 68.1% (46) of the cases, while 31.9% (21) were male.

Table 1 shows the data related to hospitalization in which 86.7% (98) of the prescriptions showed hospitalization from one to 40 days in the intensive care center and 13.3% (15) were more than 40 days old, with an average of 17.25. It is pointed out that there was a prevalence in the clinical patient under the surgical patient, who were postoperative patients of neurological procedures or general surgery. 53.1% (60) were classified as clinical and 46.9% (53) as surgical. Regarding comorbidities, systemic arterial hypertension (SAH) stands out, which was present in 34.5% (39) of the cases.

Table 1. Distribution of length of hospital stay, classification and comorbidities of patients in an ICU. Fortaleza (CE), Brazil, 2017. (n = 113)

Variables	n	%
ICU length of stay		
01 – 40 days	98	86.7
> 40 days	15	13.3
Patient classification		
Clinical	60	53.1
Surgical	53	46.9
Comorbidities		
Systemic Arterial Hypertention	39	34.5
Diabetes Mellitus	15	13.3
Drinking	4	3.5
Smoking	4	3.5
Others	24	21.2
None	27	24.0
Total	**113**	**100**

It is noted that the most commonly found device for mechanical ventilation was the tracheostome (TQT), with 59.3% (67); In contrast, 40.6% (46) were orotracheal tube (OTT). When analyzing the instrument contained in the medical chart, which was completed by the professional nurse, in 50.4% (57) of the prescriptions, the VCV/VCP modality, while 43.4% (49) showed PSV; CPAP and SIMV, 5.3% (6) and 0.9% (1), respectively. Pressure cycling achieved 56.6% (64) and volume 43.4% (49).

Respiratory rate, adjusted according to the patient's breathing comfort, was found to be between 16 and 20 rpm at 81.3% (91), with a lower number with values greater than 20 rpm, 18.7% (21).

In addition, PEEP between five and eight prevailed in 92.9% (105) of the prescriptions, while 7.1% (8) had values greater than eight, and the support pressure is not applicable in all modalities, as in A/C, thus may be absent in some prescriptions; 98.4% (111) of the cases were between zero and 20, being zero where not applicable. The inspired oxygen fraction (FiO2) was varied from 21 to 50% in 95.9% (108) of prescriptions and from 50 to 100% in 4.1% (5).

Table 2. Distribution of ventilatory modalities and parameters of patients on mechanical ventilation. Fortaleza (CE), Brazil, 2017. (n = 113)

Variables	n	%
Device Used		
OTT	46	40.6
TQT	67	59.3
VM Mode		
VCV/PCV	57	50.4
SIMV	1	0.9
CPAP	6	5.3
PSV	49	43.4
Type of cycle		
Volume	49	43.4
Pressure	64	56.6
Respiratory rate		
12 – 20 rpm	91	81.3
>20 rpm	21	18.7
PEEP		
5 – 8	105	92.9
> 8	8	7.1
Support pressure		
< 10	69	61.1
10 – 20	44	39.1
Inspired oxygen fraction (FiO_2)		
21% - 50%	108	95.9
50% - 100%	5	4.1
Total	**113**	**100.0**

*OTT: Orotracheal Tube; TQT: Tracheostomy; VCV/PCV: assisted-controlled modes cycled to volume or pressure; SIMV: Synchronized Intermitent Mandatory Ventilation; CPAP: Constant Airway Pressure; PSV: Support Pressure; PEEP: Final Expiratory Positive Pressure.

Analyzing the hemodynamic parameters recorded by the nursing professionals in the vital signs form and presented by the patients using mechanical ventilation, it was found that the axillary body temperature was 68.6% (79), with a temperature between 35.0 to 37.5. ºC; heart rate was lower than 60 bpm in 2.7% (3); between 60 and 100 bpm in 64.6% (73) and greater than 100bpm in 32.7% (36).

Mean arterial pressure was shown in 10.8% (12), below 70 mmHg; between 70 and 100 mmHg, 66.2% (74) were found and greater than 100 mmHg, 23% (26); Finally, oxygen saturation (SatO2) in 13.3% (15) was between 60 and 94%; 86.7% (98) were between 95 and 100%.

Table 3. Distribution of hemodynamic parameters of patients on mechanical ventilation in an ICU. Fortaleza (CE), Brazil, 2017. (N=113).

Variáveis	n	%
Temperature		
< 35ºC	19	16.8
35ºC – 37,5ºC	79	68.6
>37,5ºC	14	14.6
Heart rate		
<60 bpm	3	2.7
60 – 100 bpm	73	64.6
>100 bpm	36	32.7
Mean blood pressure (MBP)		
<70 mmHg	12	10.8
70 – 100 mmHg	74	66.2
>100 mmHg	26	23.0
Oxygen saturation ($SatO_2$)		
<92%	15	13.3
93 – 100%	98	86.7
Total	**113**	**100.0**

Nursing interventions related to mechanical ventilation that were prescribed by the nurse professional and checked by the same or by the nursing technician were computed: keeping the head up to 30º was the most found in 77.9% (88) of the prescriptions; using aseptic technique when handling the device and washing the SNG or SNE with 40 ml of distilled water after diet existed in

77% (87) of the prescriptions; OTT or TQT fixation was prescribed and checked in 69.9% (79), while supervising ventilator operation, monitoring cuff pressure and aspirating lower airways consisted of 69% (78); checking OTT or TQT positioning was the least found, reaching 61.9% (70) (Table 4).

Table 4. Distribution of nursing interventions prescribed and checked by nursing professionals in an ICU. Fortaleza (CE), Brazil, 2017. (N=113).

Nursing Intervention	N	%
Check OTT placement or TQT	70	61.9
Aspirate lower airways	78	69.0
Wash SNG or SNE with water after diet	87	77.0
Supervise fan operation	78	69.0
Fixate TOT or TQT	79	69.9
Monitor cuff pressure	78	69.0
Keep headboard elevated to 30°	88	77.9
Use aseptic technique when handling device	87	77.0
Total	**113**	**100.0**

Considering the comparisons between hemodynamic and respiratory variables, the chi-square correlation test was used and, as a result of the associations of these categorical variables, the following correlations were observed: support pressure and SatO2 (p = 0.000); FiO2 and SatO2 (p = 0.003).

In this context, it is necessary, through the results found in this study, to conduct other research related to the likelihood of correlations between hemodynamic and respiratory variables.

DISCUSSION

It is reflected by the sociodemographic characteristics found, the deficiency in health care of the elderly, which consequently raises the number of patients above the third age within tertiary care, more precisely needing critical care. In a study with 695 patients in an Intensive Care Unit (ICU), this same age group was predominant.[5] This result is due to the rapid aging of the population, especially in countries that are still developing, being large. the frequency of patients with chronic health problems, thus requiring specific treatment.[6]

In similar studies, male gender is the main one found in the ICU; in contrast, at the time of collection, female gender was predominant, contradicting what is said in the literature about men's low interest in health. and the government's major initiative to prevent female diseases. Women are often affected by work overload, as some do not allow time for self-care.[7-9]

It should be noted that the number of days of hospitalization in this study had a minimum of one day (less than 24h) and a maximum of 79 days, with an average time of 17 days and, compared to the literature, one study brought as permanence dependent on factors, such as the type of underlying disease and the therapeutic requirements of each patient.[10] In another study, it was found that there is no consensus regarding length of stay, given the variation in the profile of patients who are received in the sector (clinical and surgical), and it is important to consider the clinical conditions, presence of possible complications or improvement that may interfere relatively in the length of ICU stay.[11]

The number of surgical patients (53.1%) exceeds the number of surgical patients (46.9%), which can be explained by the large number of emergency room visits to the hospital under study, which in most cases require specific ICU therapy. However, it is pointed out in the literature that pre-existing diseases and untreated comorbidities contribute to the admission of clinical patients to the unit.[12]

The most frequent reasons for ICU admission were those of the neurological system, considering that the hospital receives the largest number of cases from the State because it is considered a reference and has a stroke treatment unit. followed by the respiratory system, which occupied second place, with 14.2%, showing the large number of patients using mechanical ventilation. It is pointed out that each unit, in different services, brings a diversity of specialties, as in a study with 90 patients where 53.3% of them had cardiovascular disease as their underlying disease[3], thus leading to the difference in this point of the profile of patients.[3]

It is inferred that tracheostomy was the permanent airway between patient and ventilator most found during collection (59.3%), when compared to OTT (40.6%). In a study of 70 patients in an ICU, it is described that the most commonly used device was OTT because most patients had an average stay of up to one week in the sector and did not require a longer airway.[14] This fact is confirmed by this research in which patients stay more often between one and forty days, with an average length of stay of 17 days, requiring the evolution of OTT to TQT, considering the routine

of the sector and the clinical conditions. of the inpatient.

The modalities define the manner in which the patient will be ventilated through artificial ventilation, as well as the characteristics of the ventilatory parameters. More assisted-controlled volume or pressure (VCV/VCP) was found, with 50.4%; SIMV was found in only one patient, a fact that is currently justified because it is not frequently indicated due to the increased time to withdraw from MV.[14]

The modality should be chosen according to the patient's underlying disease, its hemodynamic conditions, the team's willingness to handle the equipment, and why the ventilator is being installed on that patient.[15]

The cycling mechanism can be volume or pressure, being the second predominant in the research, comprising 56.6% (64), while the first one covered 43.4% (49), a fact that confirms the prevalent modality in the unit, which is A/C that can be cycled to volume or pressure.[16]

Regarding ventilatory parameters, the tidal volume (TV) should be adjusted according to the formula 6 ml/kg/weight initially and should be evaluated and modified according to the clinical evolution of the patient.[17] During data collection, the TV of patients cycled at volume between 200 and 400 ml/kg was predominant when compared to values greater than 400, and it was not possible to assess the tidal volume of patients cycled under pressure, since nurses did not record VT when patients were in this situation. Therefore, it is relevant to emphasize the importance of nursing records and care with TC monitoring, regardless of their cycling.

In conventional ventilatory modes, pressure-limited and time-cycled assisted-controlled (PCV) modes may be used in a situation that compromises the mechanics of the respiratory system, as they allow more adequate control of airway and alveolar pressures. This mode is characterized by keeping the pressure limited throughout the inspiratory phase, being cycled in time, and the inspiratory time fixed in seconds by the caregiver.

It is reported that the flow is free and decelerated and in this mode the VT is variable and consequent to the pressure delta administered and the patient's ventilatory mechanics (special attention should be given to expired VT monitoring and volume alarm regulation maximum and minimum minutes).[18]

The assistance of the professional nurse during the monitoring of pressure-limited and time-cycled assisted-controlled modes is paramount and extremely necessary, as there is a risk of MV generating low TV and compromising patient treatment. Therefore, it is emphasized that nursing care, being continuous, is capable of preventing possible complications and early detection of VT changes.

It was verified, as the flow, from zero to 40, in 91.3% of the cases and greater than 40 in 9.0%, being the most frequent type of firing.

Regarding respiratory rate (RR), 81.3% (91) were adjusted from 12 to 20 rpm, with a frequency of 31 times the 12 rpm value. For values greater than 20 rpm, 18.7% (21) were found. Therefore, the RF programming should be from 12 to 20 rpm, aiming at maintaining a SatO2 greater than or equal to 95%, evaluating the possibility of modification after arterial blood gas analysis.[19, 20]

Positive end-expiratory pressure (PEEP) was set at 92.9% (105) at values of five to eight cmH2O and at 7.1% (8) values greater than eight cmH2O. Compared with one study, the PEEP values were from five to ten cmH2O, with a mean of six.[18] The use of PEEP from five to eight cmH2O should be considered, compared to the physiological one. higher when better patient oxygenation is desired.[19,21]

Support pressure (PS) was varied from zero to 20 in 98.4% (111) of the cases, with zero being the value in patients who were regulated in modalities that did not require PS; 1.6% (2) were programmed with PS greater than 20.

The oxygen inspired fraction (FiO2) regulation was varied from 21% to 50% in 95.6% (108) and from 50% to 100% in 4.1% (5); When compared to a study that assessed FiO2 of 70 patients in an ICU, the average FiO2 is 97%, with the most used being 50% (18). It is noteworthy that the inspired oxygen fraction should be regulated in a manner capable of maintaining a SatO2 between 96 and 98%, being able to reduce pulmonary atelectasis and transfer adequate oxygenation to the patient.[19,22]

Hemodynamic monitoring is currently indispensable in the treatment of critically ill patients, as it can assist in establishing nursing diagnoses and interventions that will be appropriate for patients. It is possible to understand, by them, what are the hemodynamic alterations present, being able to observe hypovolemia, cardiac dysfunction, distributive shock (sepsis) or obstructive (pulmonary embolism), thus optimizing the care of the patient according to his need, preventing greater complications.[16,23-4]

Evidence was found that, through hemodynamic monitoring, it can be observed that most critically ill patients found in the ICU have hemodynamic instability in all its parameters, [25] such as 68.6% (79) showed feverish peaks or persistent fever, which is a reaction that may be present in some types of infectious damage or not, and being one of the main symptoms of infection, is often considered unfavorable to the patient. Therefore, it can be observed that hemodynamic parameters act as a set, and one by itself will not be of great

help to treatment and, consequently, to interventions.[23,26]

In some of the studies evaluated, it was shown that more than most ICU patients had complications such as pneumonia. From this, it can be observed that, among the main interventions made to the patient with ventilatory support is to keep the head up to 30° and to wash nasogastric or enteral tube with 40 ml of water after diet, as such interventions prevent bronchoaspiration. and other complications that leave the patient susceptible to opportunistic infections.[27-8]

In a study conducted in Brazil, these patients were found to be within the following nursing diagnoses: risk for impaired oral mucosa, risk for impaired swallowing, and risk for infection due to limitations such as xerostomia, aphagia, plaque formation. dental and aggregation of organic materials to language.

Within this scenario, it was pointed out by the study, oral hygiene with antiseptic (Chlorhexidine 0.12%) two to three times a day as a nursing intervention for the prevention of these complications. and their implementation according to institutional protocols or guidelines based on the best evidence.[29]

One of the main interventions established is lower airway aspiration, which is a very frequent and fundamental procedure in patients with mechanical ventilation. It is noteworthy that there are reports that each patient is aspirated approximately eight to 17 times a day. Throughout the procedure, tracheal secretion is removed, ensuring satisfactory oxygenation and making it impossible for the tube light to be obstructed, causing an increase in respiratory work.[24] Thus, it is proposed, by nursing care, to keep the patient's airway, since when the patient is under artificial respiration, it is unable to effectively expel secretions retained in the upper and lower airways.[1]

In an attempt to understand certain phenomena, the chi-square correlation test of respiratory and hemodynamic variables was performed; however, during weaning, the spontaneous breathing test (SBT) should place the patient in a T-tube or PSV of 5-7cmH2O for 30-120 minutes. Successful application of this test is considered when patients maintain adequate breathing pattern, gas exchange, hemodynamic stability and comfort. To this end, among the parameters that are evaluated, the attempt to maintain FiO2> 90%.[30-1]

It is important to remember that in certain diseases such as asthma, for example, FiO2 programming is required in order to maintain SatO2 levels> 92%.[32] It is also evident that when conducting ventilatory treatment For chronic obstructive pulmonary disease (COPD), FiO2 is adjusted based on blood gas and pulse oximetry to use the lowest FiO2 to maintain SatO2 between 92 and 95% and partial O2 pressure between 65 and 80mmHg.[33]

It is extremely necessary, when it comes to evaluating good nursing practices in the management of MV, a qualified, integral and resolute care of the professional nurse, which seeks to know the respiratory functions and parameters, the hemodynamic repercussions and functional complications of this reality, aiming at mobilizing the best logistics in the differentiated care to the critical patient.

CONCLUSION

The development of this study showed the importance of nursing care in patients using mechanical ventilation. A large number of elderly and untreated pre-existing diseases were noted, which can be considered an aggravating factor for the large number of days in ICU patients. It was observed that some interventions are entirely related to such patients, such as keeping the head up to 30º, which was the predominant one.

The study was limited by the absence of some records in the medical records, such as the absence of some ventilatory and hemodynamic parameters. Therefore, although nursing is entirely linked to patient care, it is still necessary to plan the team in the implementation of the interventions prescribed for the patient using MV so as to reduce the length of stay, complications and infections, and weaning from MV occur in a way that does not harm the future health of the patient.

REFERENCES

1. Melo EM, Teixeira CS, Oliveira RT, Almeida DT, Veras JEGLF, Frota NM, et al. Nursing care of hospitalised patients receiving mechanical ventilation in intensive care units. Referência. 2014 Feb/Mar;4(1):55-63. DOI: 10.12707/RIII1316

2. Barbas CS, Isola AL, Farias AMC, Cavalcanti AB, Gama AMC, Duarte ACM, et al. Brazilian recommendations of mechanical ventilation 2013. Part 2. Rev Bras Ter Intensiva. 2014 July/Sept;26(2):89-121. DOI: 10.5935/0103-507X.20140034

3. Castellões TMFW, SILVA LD. Guideline for nursing care in the prevention of accidental extubation. Rev Bras Enferm. 2007 Jan/Feb;60(16):106-9. DOI: 10.1590/S0034-71672007000100021

4. Rodrigues YCSJ, Studart RMB, Andrade IRC, Citó MCO, Melo EM, Barbosa IV. Mechanic ventilation: evidence for nursing care. Esc Anna Nery Rev Enferm. 2012 Oct/Dec;16(4):789-95. DOI: 10.1590/S1414-81452012000400021

5. Cordeiro ALL, Lima ASS, Matos ICO, Oliveira LVB, Guimarães AR, Carvalho SO, et al. Analysis of

mechanical ventilation time and hospitalization of patients undergoing cardiac surgery. ABCS Health Sci. 2016;42(1):03-07. DOI: 10.7322/abcshs.v42i1.942

6. Mesa P, Previglano IJ, Altez S, Favretto S, Orellano M, Lecor C, et al. Delirium em uma unidade de terapia intensiva Latino-Americana. Rev Bras Ter Intensiva. 2017 July/Sept;28(3):337-45. DOI: 10.5935/0103-507x.20170058

7. Souza NR, Freire DA, Souza AMFL, Lima DS, Brandão CS, Lima VSB. Description of patients with acute renal failure from an intensive therapy unit submitted to haemodialysis. Rev Eletrônica de Ciências [Internet]. 2017 [cited 2018 Aug 10];10(2):51-64. Available From: http://veredas.favip.edu.br/ojs/index.php/veredas1/article/view/489/pdf

8. Gulini JEHMB, Nascimento ERP, Moritz RD, Vargas MAO, Matte DL, Cabral RP. Predictors of death in an Intensive Care Unit: contribution to the palliative approach. Rev Esc Enferm USP. 2018 June; 52:e03342. DOI: 10.1590/s1980-220x2017023203342

9. Cedraz KN, Santos Junior MC. Identification and characterization of drug interactions in prescriptions of the intensive care unit of a public hospital in the city of Feira de Santana, BA. Rev Soc Bras Clin Med [Internet]. 2014 Apr/June [cited 2018 Aug 10]. 12(2):30-124. Available from: http://files.bvs.br/upload/S/1679-1010/2014/v12n2/a4178

10. Sinésio MCT, Magro MCS, Carneiro TA, Silva KGN. Risk factors for healthcare-associated infections in intensive care units. Cogitare Enferm [Internet]. 2018 [cited 2018 Aug 10];2(23):26-38. Available from: https://revistas.ufpr.br/cogitare/article/view/53826

11. Rodriguez AH, Bub MBC, Perão OF, Zandonadi G, Rodriguez MJH. Epidemiological characteristics and causes of deaths in hospitalized patients under intensive care. Rev Bras Enferm. 2016 Mar/Apr;69(2):229-234. DOI: 10.1590/0034-7167.2016690204i

12. Prece A, Cervantes J, Mazur CS, Visentin A. Perfil de pacientes em terapia intensiva: necessidade de conhecimento para organização do cuidado. Cad da Esc de Saúde [Internet]. 2016 [cited 2018 Aug 10];2(16):35-48. Available from: http://portaldeperiodicos.unibrasil.com.br/index.php/cadernossaude/article/view/2462

13. Ribeiro CL, Barbosa IV, Silva RSM, Cestari VRF, Penaforte KL, Custódio IL. Clinical characterization of patients under mechanical ventilation in an intensive therapy unit. Rev Fund Care Online. 2018 Apr/June;10(2):496-502. DOI: 10.9789/2175-5361.2018.v10i2.496-502

14. Melo EM, Santos AMM, Silveira FMM, Sombra RLS, Alves RL, Lima VF. Clinical and demographic characteristics of patients on mechanical ventilantion in the intensive care unit. Rev Enferm UFPI. 2015 July/Sept; 4(3):36-41. https://revistas.ufpi.br/index.php/reufpi/article/view/3599/pdf

15. Silva WO. Hemodynamic monitoring in critically ill patients. 2013 July/Sept;12(3):330-3. DOI: 10.12957/rhupe.2013.7531

16. Barreto LM, Torga JP, Coelho SV, Nobre V. Main characteristics observed in patients with hematologic diseases admitted to an intensive care unit of a Brazilian university hospital. Rev Bras Ter Intensiva. 2015;27(3):212-219. DOI: 10.5935/0103-507X.20150034.

17. Melo EM, Oliveira AKC, Lima VF, Garces TS, Araújo SS, Silveira FMM, et al. Evaluation of ventilator parameters in intensive therapy units. J Nurs UFPE on line [Internet]. 2017 Mar [cited 2018 Aug 10];11(3):1375-80. Available from: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/download/13979/16829

18. Associação de Medicina Intensiva Brasileira. Diretrizes brasileira de ventilação mecânica [Internet]. São Paulo: AMIB; 2013 [cited 2018 Aug 10]. Available from: http://itarget.com.br/newclients/sbpt.org.br/2011/downloads/arquivos/Dir_VM_2013/Diretrizes_VM2013_SBPT_AMIB.pdf

19. Macintyre NR. Patient-ventilator interactions: optimizing conventional ventilation modes. Respir Care [Internet]. 2011 Jan [cited 2018 Aug 10];56(1):73-84. Available from: http://rc.rcjournal.com/content/56/1/73

20. Moreira FC, Teixeira C, Savi A, Xavier R. Changes in respiratory mechanics during respiratory physiotherapy in mechanically ventilated patients. Rev Bras Ter Intensiva. 2015 Apr/June;27(2):155-60. DOI: 10.5935/0103-507X.20150027

21. Santos JRA, Rêgo RL, Guedes AD, Rocha GA. Aplicabilidade da ventilação mecânica não invasiva na melhora mecânica pulmonar no pós-operatório de cirurgia cardíaca: revisão da literatura [Internet]. Brotas: Escola Bahiana de Medicina e Saúde Pública; 2014 [cited 2018 Aug 10]. Available from: http://webcache.googleusercontent.com/search?q=cache:http://www7.bahiana.edu.br/jspui/bitstream/bahiana/306/1/TCC%2520Roberta%2520e%2520J%25C3%25A9ssica.pdf

22. Menon N, Perez-Velez CM, Wheeler JA, Morris MF, Amabile OL, Tasset MR, et al. Extracorporeal membrane oxygenation in acute respiratory distress syndrome due to influenza A (H1N1) pdm09 pneumonia: a single-center experience during the 2013-2014 season. Rev Bras Ter Intensiva. 2017 July/Sept;29(3):271-8. DOI: 10.5935/0103-507x.20170048

23. Venturi V, Viana CP, Maia LFS, Basílio MJ, Oliveira AA, Sobrinho JC, et al. The nurse's role in the management of hemodynamic monitoring in

the intensive care unit. Rev Recien. 2016;6(17):19-23. DOI: 10.24276/rrecien2358-3088.2016.6.17.19-23

24. Russo DS. Comparação de parâmetros hemodinâmicos entre terapia de reposição renal contínua, intermitente e híbrida em pacientes com insuficiência renal aguda: revisão sistemática de ensaios clínicos randomizados [Internet] [dissertation]. Porto Algre: Universidade Federal do Rio Grande do Sul; 2018 [cited 2018 Aug 10]. Available from: https://lume.ufrgs.br/handle/10183/178983

25. Serpa Neto A, Pereira VGM, Colombo G, Scarin FCLC, Pessoa CMS, Rocha LL. Should we treat fever in critically ill patients? A summary of the current evidence from three randomized controlled trials. 2014 Oct/Dec; 12(4):512-23. DOI: 10.1590/S1679-45082014RW2785

26. Barreiro Filho RD, Santiago LC, Silva RFA, Cunha KCS. O paciente submetido à ventilação mecânica e o cuidado de enfermagem que emerge da prática assistencial [Internet]. Fortaleza: CBEN; 2005 [cited 2018 Aug 10]. Available from: http://www.abeneventos.com.br/anais_61cben/files/01508.pdf

27. Carmo Neto E, Souza PC, Azevedo F, Lugarinho ME. Ventilator associated pneumonia: confection of a strategy of prophylaxis and management based on the analysis of epidemiology. Rev Bras Ter Intensiva. 2006 Oct/Dec;18(4):17-23. DOI: 10.1590/S0103-507X2006000400005

28. Pagotto IM, Oliveira LRC, Araújo FCLC, Carvalho NAA, Chiavone P. Comparação entre os sistemas aberto e fechado de aspiração. Rev Bras Ter Intensiva. 2008 Oct/Dec; 20(4):22-6. DOI: 10.1590/S0103-507X2008000400003

29. Zanei SSV, Kawamura MM, Whitaker IY, Cohrs CR. Valuation and records of oral hygiene of intubated patients in intensive care units. REME rev min enferm. 2016;20:01-07. DOI: 10.5935/1415-2762.20160035

30. Blackwood B, Alderdice F, Burns K, Cardwell C, Lavery G, O'Halloran P. Use of weaning protocols for reducing duration of mechanical ventilation in critically ill adult patients: Cochrane systematic review and meta-analysis. BMJ. 2011 Jan;342:c7237. DOI: 10.1136/bmj.c7237

31. Perren A, Domenighetti G, Mauri S, Genini F, Vizzardi N. Protocol-directed weaning from mechanical ventilation: clinical outcome in patients randomized for a 30-min or 120-min trial with pressure support ventilation. Intensive Care Med. 2002 Aug;28(8):1058-63. DOI: 10.1007/s00134-002-1353-z

32. Lim WJ, Mohammed Akram R, Carson KV, Mysore S, Labiszewski NA, Wedzicha JA, et al. Non-invasive positive pressure ventilation for treatment of respiratory failure due to severe acute exacerbations of asthma. Cochrane Database Syst Rev. 2012 Dec;12:CD004360. Review. DOI: 10.1002/14651858.CD004360.pub4

33. Jezler S, Holanda MA, José A, Franca S. Ventilação mecânica na doença pulmonar obstrutiva crônica (DPOC) descompensada. J Brasil Pneumol. 2007 July;33(Suppl 2):S111-8. DOI: 10.1590/S1806-37132007000800006

Corresponding author
Kirley Kethellen Batista Mesquita
Email: kirleybatista@gmail.com

Submission: 2019/10/15
Accepted: 2019/12/15

Copyright© 2019 Journal of Nursing UFPE on line/JNOUL.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-ShareAlike 4.0 International License. This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. Recommended for maximum dissemination and use of licensed materials.