JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

KNOWLEDGE AND DIFFICULTIES OF NURSES IN MECHANICAL VENTILATION IN A TRAUMA UNIT IN A TERTIARY CENTER IN PERNAMBUCO

Hítalo Cavalcanti Vasconcelos[1], Noélle de Oliveira Freitas[2], Alfredo Almeida Pina-Oliveira[3], Meline Rossetto Kron-Rodrigues[4]

RECEIVED: 01/05/2022 **APPROVED: 30/06/2022** **PUBLISHED: 05/07/2022**

https://doi.org/10.47820/jht.v1n1.2

ABSTRACT
Objective: To analyze the knowledge and difficulties in the assistance provided by trauma emergency nurses to patients on mechanical ventilation (MV) in a tertiary hospital located in Recife-PE. **Method**: This is a cross-sectional study with a complementary quantitative and qualitative approach that was conducted in the Trauma Emergency Unit of the Hospital da Restauração, Recife-PE. Data were collected in June 2021 using a questionnaire that assessed 4 domains of mechanical ventilation knowledge, these being: initial setting of the invasive ventilator and conventional ventilatory modes, monitoring the patient on ventilatory support, nursing care in patients on invasive ventilatory support, and sedation and analgesia during mechanical ventilation. The difficulties were measured by means of open questions at the end of the questionnaire. Inclusion criteria were: being a nurse assistant in the Trauma Emergency Department. Nurses working in administrative positions, on vacation or on leave during the data collection period were excluded. The research was approved by the Research Ethics Committee through opinion #4.704.572 and all participants previously signed the Informed Consent Form (TCLE). **Results:** Thirty nurses were analyzed, 80% were women, 43.5% were married and 67% were between 31 and 42 years old. As for the time of training in higher education, 40% revealed having up to 10 years of graduation, without other graduation in 87% of respondents and reported not having a technical course in nursing in 83%. Nursing care to patients on invasive ventilatory support, especially with regard to handling, as well as cleaning and conservation of equipment was deficient among the interviewees. Sedation and analgesia during mechanical ventilation were deficient when the use of neuromuscular blockade for deep sedation and adequate monitoring of the level of consciousness were mentioned. Among the difficulties when assisting the patient under mechanical ventilation, one can include the correct management of the ventilator, as well as the adjustment of its parameters adequate for each patient, ventilator assembly, interpreting the parameters, as well as the existence of high demand, lack of material to maintain adequate sedation of the patient, and prevention of ventilator-related accidents. As a facility, care actions such as assisting the intubation procedure, decubitus monitoring, sedation installation, basic parameters maintenance and endotracheal suctioning were mentioned. **Conclusions:** The authors suggest that continued education and specific training actions should be implemented to improve the assistance of nurses who assist MV patients in emergency units.
DESCRIPTORS: Nursing Care. Nurses. Artificial Respiration. Trauma Centers. Advanced Trauma Life. Support Care

1. INTRODUCTION

Mechanical ventilation (MV) is one of the therapeutic pillars of highly complex hospital units, because it is considered one of the main tools in the treatment of critically ill patients, especially those

[1] Nurse Master in Sciences by Universidade Guarulhos, UNG - UNIVERITAS.
[2] Nurse Doctor in Sciences by Escola de Enfermagem de Ribeirao Preto da Universidade de Sao Paulo, EERP-USP. Professor of the Master's and Doctoral Programs in Nursing of Universidade Guarulhos, UNG - UNIVERITAS.
[3] Nurse Doctor in Sciences by Universidade de São Paulo, USP. Professor Doutor do Centro Universitário Campo Limpo Paulista, UNIFACCAMP, São Paulo.
[4] Nurse Doctor Gynecology, Obstetrics and Mastology by Faculdade de Medicina de Botucatu –UNESP. Professor of the Master's and Doctoral Programs in Nursing of Universidade Guarulhos, UNG, UNIVERITAS.

with respiratory failure. Thus, MV is configured as an extremely important support for the patient when he is not able to take his own breath, and knowledge and handling of this type of support by the health team is of fundamental importance.[1]

It works by using a machine that replaces totally or partially the patient's ventilatory activity, aiming to reestablish the balance between oxygen supply and demand and to attenuate the respiratory workload in patients with respiratory failure. [2]

Among the complications of MV use, pneumonia after intubation, reintubation, orotracheal tube obstruction, tracheal bleeding due to trauma, among others, may occur. It is known that the occurrence of complications associated with MV increases mortality and length of stay in hospital units.[3]

Healthcare related pneumonia is commonly of aspiration focus. The main source occurs due to upper airway secretions that later present exogenous inoculation of contaminated material or by reflux from the gastrointestinal tract. [4]

These aspirations are more commonly silent microaspirations, and are hardly macroaspirations, which makes their momentary identification difficult. However, when they do occur, they bring on a picture of severe and rapidly progressive respiratory failure. The literature points out that pneumonia is rarely caused by hematogenous dissemination from a distant infectious focus.[5]

MV patients constitute the increased risk group for pneumonia. This increased risk is essentially due to three factors: 1 - decreased defense of the patient; 2 - increased risk of airways inoculated with large amounts of contaminated material and finally 3 - presence of more aggressive and antimicrobial resistant microorganisms in the environment, nearby surfaces, materials thus colonizing the patient himself.[5-7]

The decrease in pulmonary defense may be related to several causes and these can occur alone or in association. Among these causes are: the presence of underlying disease, such as cancer, acute or chronic lung disease, autoimmune diseases, the use of immunosuppressive drugs (corticosteroids, chemotherapy), and the use of tracheal prostheses.[6]

The surveillance, prevention and control of damage to patients using MV has become a major responsibility for health professionals who permeate the highly complex hospital units.[7]

A study that aimed to evaluate the care performed by the nursing team to the patient under MV admitted to an Intensive Care Unit (ICU) as well as to identify the difficulties presented by the team in performing such care, identified that hand washing before the procedures; hydric and respiratory pattern monitoring; performing oral hygiene and tracheal suctioning with aseptic technique as well as checking the mechanical ventilator alarms and understanding the cause of the problem were the main actions performed. As for the difficulties, the following were mentioned: lack of knowledge, opportunity, time and safety when handling the ventilator.[8]

A study that aimed to evaluate the nurses' knowledge about mechanical ventilation in the ICU of a reference hospital in Fortaleza, identified that there is a distancing of this professional in relation to this support, either by lack of knowledge or because this care is delegated to a professional

from another area. The research identified that there are numerous difficulties that guide nursing practice in MV in the ICU, however, nurses cannot distance themselves from their primary objective, which is care; therefore, it is essential that there is a theoretical-practical and scientific deepening compatible with the complexity of care for these patients and technologies directed to their assistance. [8]

Relevant and important care for good care practices in the context of hospital emergencies and the use of MV should be employed in order to bring safety to the patient and increase the quality of the service provided.

In nursing, good practice is understood as the interrelated set of theories, techniques, processes and activities seen as the best alternatives available for care in the area, bringing consistency with knowledge, values, contexts, environments, objectives and evidence in the interest of health. [5]

The development of good practices, together with training of the multiprofessional team is a determining factor for the reduction of damage to patients, reduction of length of stay in the emergency room and use of ICU and its consequences, aiming at promoting safe care to the patient in this reality.[6,5]

Literature measured the nurses' knowledge about MV in the ICU setting and evidenced the need for continued education on the subject and a policy to hire specialized nurses to work in this type of environment, since there are difficulties presented by the team in performing MV care.[7-9]

However, MV must be used in a controlled environment with a qualified team, being the ICU an appropriate setting. However, the sectors before the patient enters the ICU must be qualified to offer this technology, since the general panorama of the number of ICU vacancies in Brazil is not always immediately sufficient, and the patient must wait for a vacancy. Given the above, this manuscript aimed to evaluate the knowledge and difficulties in the assistance provided by trauma emergency nurses to patients on mechanical ventilation in a localized tertiary hospital.

2. MATERIAL AND METHOD

This is a cross-sectional study with a quantitative and qualitative complementary approach conducted in June 2021 in the session of the Trauma Emergency of the Hospital da Restauração, located in the city of Recife-PE. An institution has 830 beds registered in the Ministry of Health to meet the demand that is submitted to it, besides being accredited by the Ministry of Education (MEC) as a Teaching Hospital since 2005.

The sample consisted of nurses who worked in the Trauma Emergency of the Hospital da Restauração during the collection period. Nurses working in administrative positions, on vacation or on leave during the period of data collection were excluded.

The data were collected by means of a questionnaire that evaluated 4 domains of mechanical ventilation knowledge, being: initial setting of the invasive ventilator and conventional ventilation

modes, monitoring the patient with ventilatory support, nursing care in patients with invasive ventilatory support and sedation and analgesia during mechanical ventilation.[12]

The questionnaire was designed by the researchers based on the Brazilian Guidelines on Mechanical Ventilation - 2013, authored by the Brazilian Intensive Care Medicine Association (AMIB) - and Brazilian Society of Pulmonology and Phthisiology (SBPT) 9 and the Anvisa manual: Health Care-Related Infection Prevention Measures. Brasília: Anvisa, [10].

Difficulties in the assistance given by nurses to patients under mechanical ventilation were measured by means of open questions at the end of the questionnaire, as follows: Which difficulties do you identify(or) when assisting the patient in mechanical ventilation?; Which facilities do you identify(or) when assisting the patient in mechanical ventilation? and Would you like to report any more details about your experience when caring for someone in mechanical ventilation?

This survey was authorized by the coordinators of the Hospital da Restauração and subsequently submitted to the Research Ethics Committee of the Universidade Guarulhos (UNG) and approved under CAAE: 45085621.1.0000.5506.

After collection, the data were tabulated in Microsoft Excel® spreadsheets and the results were organized in tables and expressed as percentages and whole numbers for quantitative analysis. The lexical analysis was developed by R (A Language and Environment for Statistical Computing) software[11].

3. RESULTS

The sample consisted of 30 nurses who worked in the Emergency Department of the Hospital da Restauração during the period of data collection.

The characterization showed that 80% (24) were women, 43.5% (13) married and aged from 31 to 42 years old 67% (20). As for the time of graduation in higher education, 40% (12) revealed having up to 10 years of graduation, 87% (26) of the interviewees had no other degree, and 83% (25) reported not having a technical course in nursing. As for complementing the undergraduate degree with a lato sensu post-graduation, 90% (27) reported having one, and in the stricto sensu modality, only 16% (5) reported having a diploma.

Regarding the time of experience in the Trauma Emergency Department of the hospital where the data were collected, 80% (24) reported having up to 10 years of experience in this sector. However, when asked if there was previous experience in other emergency units, 57% (17) reported having it. When questioned if they had previously worked in the ICU sector, 73% (22) reported that they had not. Table 1 describes the characteristics of the nurses participating in this study.

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

Table 1- Characterization of the nurses included in the analysis to evaluate the knowledge and difficulties in the care provided by nurses to patients under mechanical ventilation in a tertiary hospital, 2021.

		#	%
Sex	Women	24	80
	Men	6	20
Marital Status	Married	13	43
	Single	10	35
	Divorced	5	16
	Consensual Marriage	2	6
Age	43 to 56 years old	4	13
	31 to 42 years old	20	66
	20 to 30 years old	6	21
Time in years of graduation	Up to 10 years	12	40
	11 to 20 years	11	37
	≥ 21 years	7	23
He/She Has another degree	No	26	87
	Yes	4	13
He/She has the nursing technician	No	25	83
	Yes	5	17
Post Lato Sensu	Yes	27	90
	No	3	10
Pos Stricto Sensu	Yes	5	16
	No	25	84
Time of performance in the emergency service	Up to 10 years	24	80
	11 to 20 years	4	13
	≥21 years	2	7
Previous ICU experience?	Yes	8	27
	No	22	73
Acting in another emergency unit?	Yes	17	57
	No	13	43

The knowledge assessment regarding mechanical ventilation showed that 57% (17) of the professionals analyzed have adequate knowledge about the domain "initial setting of the invasive ventilator and conventional ventilation modes".

Issues such as use of the fraction of inspired oxygen (FIO2) necessary to maintain arterial oxygen saturation between 93 to 97% and tidal volume 6 ml/kg/weight initially and reevaluation according to the evolution of the patient's clinical picture need to be worked out with the team, because only 40% (12) of professionals were aligned with the correct literature.

In the domain "Monitoring the patient with ventilatory support", 80% (27) were correct when mentioning that the expired tidal volume (VTe), peak pressure (maximum inspiratory pressure), plateau or inspiratory pause pressure (in controlled ventilation), extrinsic PEEP, auto-PEEP or intrinsic PEEP are mandatory factors in routine bedside ventilatory mechanics monitoring. In the question regarding the gasometry collection in all patients under ventilatory support about 20 minutes after the ventilator initial parameter setting and daily while the acute phase of the condition lasts, only 50% (15) answered right when reporting as necessary. Finally, in the last question of this domain, 70% (21) agreed that arterial blood gas analysis only portrays a certain moment of the patient, and thus, for effective continuous monitoring, pulse oximetry and capnography are the best methods.

The domain "Sedation and analgesia during mechanical ventilation" covered the question regarding the use of sedation and analgesia during mechanical ventilation to help control anxiety, agitation and pain. In this statement, 93% (28) of the interviewed professionals answered correctly the questioning regarding the sedation level being light to moderate to allow early mobilization, 50% (15) professionals answered correctly the questioning. Regarding the use of cisatracurium in the first 48 hours in cases of Acute Respiratory Distress Syndrome (ARDS) with a PaO2/FiO2 ratio < 120 to maintain controlled mechanical ventilation, only 20% (6) of the professionals agreed with the statement. Regarding the use of the SAS (Sedation and Agitation Scale) or RASS (Richmond Agitation and Sedation Scale) scales to monitor the sedation level of the patient under mechanical ventilation, only 54% (16) were in agreement with the correct information.

In the domain "Nursing care in patients on invasive ventilatory support" 78% (23) of the professionals interviewed were aligned with the main nursing care in patients on invasive ventilatory support. Regarding nursing care for the use, care in changing the circuit, filters and humidifiers, only 43% (13) of the professionals were correct in the correct handling of the equipment.

Regarding the cleaning and conservation of the equipment, only 36% (11) correctly related the accomplishment of high-level disinfection (Sodium Hypochlorite at a concentration of 0.5% and contact time of 60 minutes) or sterilization in the circuits of the mechanical ventilators. Regarding the care provided by the nursing team during bed bathing and change of decubitus in the care of patients on invasive ventilatory support, 96% (29) were aligned with the correct care. Regarding the preventive care for the development of pneumonia, 90% (27) of the nurses were oriented about the correct conduct. Regarding the daily adjustment of the sedation level and the spontaneous breathing test, as a reduction in the rate of Mechanical Ventilator-Associated Pneumonia (VAP), 60% (18)

answered correctly. Regarding the inadequate processing of products used in ventilatory therapy contributing to the acquisition of pneumonia, 56% (17) professionals were in line with the literature. Table 2 expresses in detail the findings of the domains related to mechanical ventilation.

Regarding nursing difficulties in mechanical ventilation, 94% (28) of nurses considered necessary the existence of continued education regarding management of patients under mechanical ventilation for the nursing team. 83% (25) of the interviewed professionals reported that they had already or currently have some difficulty and/or doubt on the management of patients under mechanical ventilation. Of these, 60% (18) reported that they sought help from a work colleague to assist in doubts regarding mechanical ventilation.

The open questions identified that the correct management of the ventilator, as well as the adjustment of its parameters adequate for each patient, mounting the ventilator, interpreting the parameters as well as the existence of high demand, absence of material to maintain the adequate sedation of the patient and prevention of accidents related to mechanical ventilation are the main difficulties when assisting the patient under mechanical ventilation.

Regarding the facilities identified when assisting the patient under mechanical ventilation, we have the actions of connecting the patient to the tube, assisting the intubation procedure, performing decubitus monitoring, installing sedation and maintaining the basic parameters and performing endotracheal suction as the main activities mentioned.

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

Table 2- Findings of the domains related to mechanical ventilation analyzed in this study and their respective hit rates:

Domain	Questionnaire Alternatives		
NURSING CARE IN PATIENTS ON INVASIVE VENTILATORY SUPPORT	Main nursing care for patients on invasive ventilatory support: Use, circuit change, filters and humidifiers; Cleaning and conservation of equipment; Care during shower and decubitus change; Specific care in oral hygiene, oral and enteral feeding; All of the above; I prefer not to answer.	78% (23) 19% (5) 3% (1)	They got it right Got it wrong Preferred not to answer
	Alternatives you judge correct as to the nursing care for use, care in circuit replacement, filters and humidifiers: Change the humidity and heat exchanger devices every 7 days (hygroscopic and hydrophobic), provided that the proper height and position of the device in relation to the endotracheal tube is maintained (the device must remain VERTICAL, connected to the tube and circuit, so that micro drops and dirt do not flood it). In case of dirt, condensation or damage, the filter must be changed; Do not routinely change the mechanical ventilator circuit, only when it presents dirt visible to the naked eye, damage or prolonged ventilation (> 30 days); All of the above; Prefer not to answer.	43% (13) 54% (16) 3% (1)	They got it right Got it wrong Preferred not to answer
	Regarding the cleaning and conservation of the equipment, do you think it is necessary to perform high-level disinfection (Sodium Hypochlorite at a concentration of 0.5% and contact time of 60 minutes) or sterilization on the mechanical ventilator circuits?	36% (11) 50% (15) 14% (4)	They got it right Got it wrong Preferred not to answer
	The Nursing team during bed bath and change of decubitus in the assistance to patients in Invasive Ventilatory Support must perform the vital signs evaluation, analysis and register of the mechanical ventilator parameters (ventilatory mode, peak pressure, PEEP, f, VC and FIO2), check the alarms and clinical parameters before performing the bed bath and change of decubitus, besides keeping the cardiac monitoring and saturation?	96% (29) 4% (1)	They got it right Got it wrong
	Keeping the decubitus elevated (30-45°) is preventive for the development of pneumonia, because mechanical ventilation is associated with high rates of pneumonia. This is because the endotracheal tube inhibits important defense mechanisms of the upper respiratory tract, contributes to the production and accumulation of oropharyngeal secretions, inhibits effective coughing mechanisms, and may be a source of infection. Colonization of the oropharynx and stomach with pathogenic microorganisms appears to precede the development of ventilator-associated pneumonia. For these reasons, improper positioning of the patient can impact the onset of pneumonia. Moreover, positioning the patient in the raised decubitus position may also favor spontaneous ventilation	90% (27) 7% (2) 3% (1)	They got it right Got it wrong Preferred not to answer
	Adequate the level of sedation and spontaneous breathing test daily, because the use of the highest possible dose of sedation and the assessment of the patient's readiness for extubating has been correlated to a reduction in the duration of mechanical ventilation and, consequently, to a reduction in the rate of ventilator-associated pneumonia (VAP)	60% (18) 34% (10) 6% (2)	They got it right Got it wrong Preferred not to answer
	Acquisition of pneumonia is associated with the inadequate processing of products used in ventilatory therapy. Therefore, it is essential that these products be processed according to the available scientific evidence and the health	56% (17) 38% (11) 6% (2)	They got it right Got it wrong Preferred not to answer

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

	regulations on the subject. Respiratory assistance products classified as critical must be submitted to disinfection after proper cleaning. Respiratory assistance products classified as semi-critical must be submitted to cleaning and, at least, disinfection of intermediate level.		
INITIAL REGULATION OF THE INVASIVE VENTILATOR AND CONVENTIONAL VENTILATION MODES	Regarding the initial setting of the invasive ventilator, mark the alternative that you think is correct: After 30 minutes of stable ventilation an arterial gasometry should be collected to observe if the ventilation and gas exchange goals were achieved. If not, make the necessary readjustments in the mode and cycling parameters; use the necessary FIO2 to maintain arterial oxygen saturation between 93 to 97%;)use tidal volume 6 ml/kg/weight predicted initially. Reevaluate according to the evolution of the patient's clinical condition; All of the above;( ) I prefer not to answer.	57% (17) 40% (12) 3% (1)	They got it right Got it wrong Preferred not to answer
	Use of passive heaters and humidifiers in mechanically ventilated patients. In patients with thick secretions, active humidification and warming should be used, if available with optimal humidification, to avoid occlusion of the orotracheal tube.	40% (12) 40% (12) 20% (6)	They got it right Got it wrong Preferred not to answer
MONITORING THE PATIENT WITH VENTILATORY SUPPORT	Routine bedside monitoring of ventilatory mechanics should be performed in every patient submitted to invasive mechanical ventilatory support, and the following parameters are understood and evaluated: Expired tidal volume (VCe), Peak pressure (maximal inspiratory pressure), Plateau or inspiratory pause pressure (in controlled ventilation), extrinsic PEEP, auto-PEEP or intrinsic PEEP.	80% (24) 20% (6)	They got it right Got it wrong Preferred not to answer
	Gasometry should be collected in all patients under ventilatory support about 20 minutes after the initial adjustment of ventilator parameters and daily for the duration of the acute phase. A new sample should be collected if the patient's clinical condition changes.	50% (15) 50% (15)	They got it right Got it wrong
	Arterial blood gas only portrays a certain moment of the patient. For continuous monitoring, pulse oximetry and capnography are the best methods.	70% (21) 17% (5) 13% (4)	They got it right Got it wrong Preferred not to answer
SEDATION AND ANALGESIA DURING MECHANICAL VENTILATION	It is necessary to use sedation and analgesia during mechanical ventilation to help control anxiety, agitation, and pain. The adequate sedation helps to promote the patient's tolerance to the ventilator, therapeutic and diagnostic procedures	93% (28) 7% (2)	They got it right Got it wrong
	The level of sedation should be light to moderate to allow early mobilization	50% (15) 30% (9) 20% (6)	They got it right Got it wrong Preferred not to answer
	Cisatracurium should be used in the first 48 hours in cases of Acute Respiratory Distress Syndrome (ARDS) with a PaO2/FiO2 ratio < 120 to maintain controlled mechanical ventilation. The use of neuromuscular blockade is conditional on deep sedation and adequate monitoring of the level of consciousness.	20% (6) 63% (19) 17% (5)	They got it right Got it wrong Preferred not to answer
	To monitor the level of sedation of the patient on mechanical ventilation, the use of the SAS (Sedation and Agitation Scale) or RASS (Richmond Agitation and Sedation Scale) scales is recommended.	54% (16) 20% (6) 26% (8)	They got it right Got it wrong Preferred not to answer

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

3. DISCUSSION

It is estimated that this is the first work that aimed to identify the knowledge and difficulties in the assistance provided by trauma emergency nurses to the patient on mechanical ventilation a localized tertiary hospital.

In the domain referring to "nursing care in patients under invasive ventilatory support", regarding the use and exchange of circuits, care during bathing and oral hygiene, maintenance of raised decubitus and adequate sedation level, it was noticed that the great majority of interviewed nurses are aligned with the correct management. These findings make it possible to identify that this properly performed care is associated with a decrease in the incidence of respiratory infections such as pneumonia by mechanical ventilation, upper airway pathologies, respiratory muscle weakness and among other respiratory complications10.

This domain was shown to be deficient among the interviewees when asked about the correct ventilator management and equipment cleaning and conservation. This fact is in line with the difficulties reported by the participants, where it was mentioned that assembling the ventilator is a difficulty for the professionals. The findings corroborate a survey that aimed to identify the challenges, especially the difficulties of care provided to critically ill patients in the emergency department of a public teaching hospital from the point of view of nurses and showed that the mechanical ventilator is the equipment used in critical patient care that nurses have more difficulty handling12.

The same study identified that the care related to mechanical ventilation is considered by nurses as more difficult to perform in patients12. This fact, associated with the findings of this study, highlights the need for continuing education of the team on the subject, because failures in the process of mechanical ventilation can result in exchanges of microorganisms between patients and hospital infections.

The domain of sedation and analgesia during mechanical ventilation obtained an accuracy of 93% of the interviewees, regarding the benefits of sedation, anxiety control, agitation, pain and tolerance to mechanical ventilation. On the other hand, assistance and sedation to patients with Acute Respiratory Distress Syndrome (ARDS) showed an error rate of 63%, a pathology of difficult treatment and care, requiring training and continuing education for a better approach by the team.

Continuing education regarding the management of patients on mechanical ventilation for the nursing team was cited in 94% as necessary by the interviewees. This finding corroborates the literature, where studies indicate that nurses perceive the importance and need for Continued Education13,14.

Continuing education cannot be only a means for the employee to be trained for the job;

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

it must be an instrument that helps the professional to reflect about the importance of his work and how much it can be enriched in his daily routine, and it must always motivate him to seek professional enrichment.

A non-randomized controlled clinical trial with the objective of determining the effectiveness of an educational strategy to improve the performance of the nursing team in performing preventive procedures for ventilator-associated pneumonia through the application of 12 workshops lasting four hours each for nurses or nursing technicians working in the ICU showed that the educational intervention was effective in correctly assembling the mechanical ventilator with aseptic technique, cleaning the tongue and maintaining the correct tube-nose-mouth order during the bronchial hygiene procedure15.

The present study has limitations, such as the low number of nurses included in the sample and the use of a questionnaire created by the authors. However, no validated instrument was found in the literature to assess the nurses' knowledge and difficulties in mechanical ventilation.

It is known that the process of assistance to the patient under mechanical ventilation requires dedication, study and constant training by the team and also a multiprofessional work for a better assistance to the patient, because it permeates risks to the patient if not well conducted. Thus, it is necessary that managers enable an educational process in their work environment considering that the starting point of learning is the experience acquired by these professionals in their routine.

4. CONCLUSION

This study made it possible to analyze the nurses' knowledge of the patient under mechanical ventilation in the trauma unit of the Hospital da Restauração, located in the city of Recife-PE, as well as to identify the difficulties existing in the assistance.

The nursing care of patients under invasive ventilation support, especially regarding the handling, cleaning and conservation of the equipment, was deficient among the interviewees. Sedation and analgesia during mechanical ventilation was also deficient when the use of neuromuscular blockade for deep sedation and the adequate monitoring of the level of consciousness were mentioned.

Among the difficulties when assisting the patient under mechanical ventilation may be included the correct management of the ventilator, as well as the adjustment of its parameters adequate for each patient, mounting the ventilator, interpreting the parameters as well as the existence of high demand, absence of material to maintain the adequate sedation of the patient and prevention of ventilator-related accidents. As a facility, care actions such as assisting the intubation procedure, performing decubitus monitoring, installation of sedation, maintenance of

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

basic parameters and performance of endotracheal suction were mentioned.

These findings suggest that continuing education actions and specific training should be implemented to improve the assistance of nurses who assist MV patients in emergency units.

5. REFERENCES

1. Versa, G. L. G. D. S., Inoue, K. C., Nicola, A. L., & Matsuda, L. M. (2011). Influência do dimensionamento da equipe de enfermagem na qualidade do cuidado ao paciente crítico. Texto & Contexto-Enfermagem, 20(4), 796-802.

2.Santos Cleverson dos, Nascimento Eliane Regina Pereira do, Hermida Patrícia Madalena Vieira, Silva Tatiana Gaffuri da, Galetto Sabrina Guterres da Silva, Silva Nelson Junior Cardoso da et al . Boas práticas de enfermagem a pacientes em ventilação mecânica invasiva na emergência hospitalara. Esc. Anna Nery [Internet]. 2020 [cited 2020 Dec 07] ; 24(2): e20190300. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452020000200219&lng=en. Epub Mar 02, 2020. http://dx.doi.org/10.1590/2177-9465-ean-2019-0300

3. Carrilho Claudia Maria Dantas de Maio, Grion Cíntia Magalhães Carvalho, Carvalho Lais Magalhães, Grion Adriana dos Santos, Matsuo Tiemi. Pneumonia associada à ventilação mecânica em Unidade de Terapia Intensiva cirúrgica. Rev. bras. ter. intensiva [Internet]. 2006 Mar [cited 2020 Dec 07] ; 18(1): 38-44. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-507X2006000100008&lng=en. https://doi.org/10.1590/S0103-507X2006000100008.

4. BRASIL, Ministério da Saúde . Agência Nacional de Vigilância Sanitária(ANVISA) .Série Segurança do Paciente e Qualidade em serviços de saúde 4, 2017. Medidas de Prevenção de Infecção Relacionada à Assistência em Saúde. 2017.

5. Melo Elizabeth Mesquita, Teixeira Carlos Santos, Oliveira Rogéria Terto de, Almeida Diva Teixeira de, Veras Joelna Eline Gomes Lacerda de Freitas, Frota Natasha Marques et al . Nursing care of hospitalised patients receiving mechanical ventilation in intensive care units. Rev. Enf. Ref. [Internet]. 2014 Mar [citado 2021 Jan 15] ; serIV(1): 55-63. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0874-02832014000100007&lng=pt. http://dx.doi.org/10.12707/RIII1316.

6. Rodrigues Yarla Cristine Santos Jales, Studart Rita Mônica Borges, Andrade Ítalo Rigoberto Cavalcante, Citó Maria do Carmo de Oliveira, Melo Elizabeth Mesquita, Barbosa Islene Victor. Ventilação mecânica: evidências para o cuidado de enfermagem. Esc. Anna Nery [Internet]. 2012 Dec [cited 2021 Jan 15] ; 16(4): 789-795. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452012000400021&lng=en. https://doi.org/10.1590/S1414-81452012000400021

7. Frota Melissa Lopes, Campanharo Cássia Regina Vancini, Lopes Maria Carolina Barbosa Teixeira, Piacezzi Luiz Humberto Vieri, Okuno Meiry Fernanda Pinto, Batista Ruth Ester Assayag. Good practices for preventing ventilator-associated pneumonia in the emergency department. Rev. esc. enferm. USP [Internet]. 2019. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342019000100438&lng=en. Epub June 13, 2019. https://doi.org/10.1590/s1980-220x2018010803460.

JOURNAL HEALTH AND TECHNOLOGY - JHT
ISSN 2764-7625

8. Santos, C. D., Nascimento, E. R. P. D., Hermida, P. M. V., Silva, T. G. D., Galetto, S. G. D. S., Silva, N. J. C. D., & Salum, N. C. (2020). Boas práticas de enfermagem a pacientes em ventilação mecânica invasiva na emergência hospitalara. Escola Anna Nery, 24(2).

9. AMIB; SBPT. Diretrizes Brasileiras em Ventilação Mecânica.Disponível em: https://www.amib.org.br/fileadmin/user_upload/amib/2018/junho/15/Diretrizes_Brasileiras_de_Ventilacao_Mecanica_2013_AMIB_SBPT_Arquivo_Eletronico_Oficial.pdf. Acesso em 10 de fevereiro de 2021.

10. Brasil. Agência Nacional de Vigilância Sanitária Medidas de Prevenção de Infecção Relacionada à Assistência à Saúde. Brasília: Anvisa, 2017. Disponível em: https://www20.anvisa.gov.br/segurancadopaciente/index.php/publicacoes/item/caderno-5. Acesso em 21 de fevereiro de 2021

11. R Core Team. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria, 2018.

12. Zandomenighi RC, Mouro DL, Oliveira CA, Martins CA. Cuidados intensivos em um serviço hospitalar de emergência: desafios para os enfermeiros.Rev Min Enferm. 2014 abr/jun; 18(2): 404-414. DOI: 10.5935/1415-2762.20140031

13. Silva GM, Seiffert MOLB. Silva GM, Seiffert MOLB. Educação continuada em enfermagem: uma proposta metodológica. Rev Bras Enferm, Brasília 2009 maio-jun; 62(3): 362-6

14. Silva MF, Conceição FA, Leit MMJ.Educação continuada: um levantamento de necessidades da equipe de enfermagem. O Mundo da Saúde São Paulo: 2008: jan/mar 32(1):47-55

15. Gonçalves FAF, Brasil V V, Minamisava R, Caixeta CR, Oliveira LMAC, Cordeiro JABL. Eficácia de estratégias educativas para ações preventivas da pneumonia associada à ventilação mecânica. Esc Anna Nery (impr.)2012 out -dez; 16 (4):802 - 808