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# Conforto e ventilação mecânica: perspectivas na teoria de Katharine Kolcaba

Comfort and mechanical ventilation: perspectives on Katharine Kolcaba's theory

Confort y ventilación mecánica: perspectivas sobre la teoría de Katharine Kolcaba

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**RESUMO**

**Objetivo:** Refletir sobre a abordagem da equipe de enfermagem diante da possibilidade da oferta de conforto aos pacientes dependentes de ventilação mecânica, bem como refletir acerca das complicações e consequências diante desta proposta terapêutica, possibilitando a minimização de impactos ocasionados pela utilização desta tecnologia na unidade de terapia intensiva, com base na Taxonomia de North American Nursing Diagnosis Association - NANDA**. Método:** Trata-se de estudo revisão bibliográfica realizada em bases de dados eletrônicas: Scielo, Lilacs e BVS, ano de 2022. **Resultados:** Os artigos estudados apontam para a possibilidade de ofertar conforto aos pacientes em uso de ventilação mecânica, com o objetivo de minimizar o sofrimento quando submetidos a procedimentos invasivos e dolorosos. **Conclusão:** As prescrições de medidas de cuidados que propiciem o conforto deverão ser supervisionadas pelo enfermeiro, tendo em vista a complexidade clínica do paciente. Para sua exatidão e eficácia mensurada ao campo dos cuidados estabelecidos pelas taxonomias de enfermagem, evidenciados como resultado sua aplicação aos pacientes.

**Descritores:** Respiração artificial, Conforto do paciente, NANDA.

**ABSTRACT**

**Objective:** To reflect on the nursing team's approach to the possibility of offering comfort to patients dependent on mechanical ventilation, as well as to reflect on the complications and consequences of this therapeutic proposal, making it possible to minimize the impacts caused using this technology in the intensive care unit, based on the Taxonomy of the North American

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Nursing Diagnosis Association - NANDA. **Method:** This is a bibliographic review carried out in electronic databases: Scielo, Lilacs and BVS, year 2022. **Results:** The articles studied point to the possibility of offering comfort to patients using mechanical ventilation, with the aim of minimizing suffering when subjected to invasive and painful procedures. **Conclusion:** Prescriptions for care measures that provide comfort should be supervised by nurses, given the clinical complexity of the patient. For their accuracy and effectiveness, they should be measured in the field of care established by the nursing taxonomies.

**Descriptors:** Artificial respiration, Patient comfort, NANDA.

**RESUMEN**

**Objetivo:** Refletir sobre a abordagem da equipe de enfermagem diante da possibilidade da oferta de conforto aos pacientes dependentes de ventilação mecânica, bem como refletir acerca das complicações e consequências diante desta proposta terapêutica, possibilitando a minimização de impactos ocasionados pela utilização desta tecnologia na unidade de terapia intensiva, com base na Taxonomia de North American Nursing Diagnosis Association - NANDA. **Método:** Trata-se de estudo revisão bibliográfica realizada em bases de dados eletrônicas: Scielo, Lilacs e BVS, ano de 2022. **Resultados:** Os artigos estudados apontam para a possibilidade de ofertar conforto aos pacientes em uso de ventilação mecânica, com o objetivo de minimizar o sofrimento quando submetidos a procedimentos invasivos e dolorosos. **Conclusão:** As prescrições de medidas de cuidados que propiciem o conforto deverão ser supervisionadas pelo enfermeiro, tendo em vista a complexidade clínica do paciente. Para sua exatidão e eficácia mensurada ao campo dos cuidados estabelecidos pelas taxonomias de enfermagem, evidenciados como resultado sua aplicação aos pacientes.

**Descriptores:** Respiração artificial; Conforto do paciente; NANDA.

**INTRODUCTION**

Comfort is a basic human need. From the perspective of the nursing team, the satisfaction of functional taxonomies and nursing theories, comfort is the result of the care provided.[1]

In Katharine Kolcaba's theory of comfort, comfort is characterized as an immediate experience, corroborated by various sensations inherent to the human being. The sensation of relief, tranquility, and transcendence, thus firming up the biopsychosocial-spiritual human being.[2]

Humanization is the process of becoming human. In other words, it's putting yourself in the other person's shoes. It's having empathy. The question therefore arises: What is the least painful or traumatic process for patients in the Intensive Care Unit? Is it possible to use mechanisms or strategies that enable more humanized and optimized care for these patients?

From the point of view of health technology, the following can be defined: 1. light technology - these are relationships, approachability, welcoming, and ways of managing the work process. 2. light technology - hard technology - these are those that operate in the health area, such as surgical and psychiatric clinics. 3. heavy or hard technologies - The technological equipment used in the health service, such as machines and organizational structures.

In the Intensive Care Unit, the healthcare team is constantly manipulating and configuring heavy technology according to the clinical needs of each patient. Examples of this technology are mechanical ventilators, *extracorporeal membrane oxygenation (*ECMO) and ultrafiltration dialysis machines. Technical-scientific knowledge, as well as extensive updates in the handling/manipulation/configurations of these electromedical devices, is extremely necessary if the risks are to be minimized in the care provided in each case.

Within the nursing taxonomies, especially the official nursing diagnoses of the *North American Nursing Diagnosis Association* - NANDA, categorization exists, and it is up to nurses to scientifically analyze their applicability, contextualizing them to the severity, treatment and prognosis of each patient.[3]

The *North American Nursing Diagnosis Association* (NANDA) categorizes at least two interfaces. It will be up to the nurse to apply them, critically analyzing their accuracy and prescribing nursing conduct and care. This study addresses the nursing diagnoses applicable to the comfort of patients on mechanical ventilation, within the NANDA taxonomy (2021-2023).

Within its scope, the following diagnoses are inferred: Ineffective Breathing Pattern and Impaired Gas Exchange.[4]

In Intensive Care Units, patients dependent on mechanical ventilation are usually treated in a way that guarantees the minimum comfort to be offered.

The humanization of nursing care, as well as that of the entire multi-professional team, is something to be achieved so that clients (patients) are in better conditions of comfort. It is necessary to provide care that goes beyond the basic needs of the human being in order to bring them satisfaction, or in more serious cases, the alleviation of feelings of discomfort and pain. In order to humanize, we need to put ourselves in the other person's shoes, because the peculiarity of feelings is inherent to human nature. Understanding how others feel when they are unable to leave their beds, when they are coupled to the most diverse types of electromedical equipment, is the approach that is necessary to offer more comfort and humanization in the care provided.

The ICU's multi-professional team is made up of professionals from a wide range of areas: nurses, nursing technicians, doctors, physiotherapists, nutritionists, speech therapists, psychologists, social workers, among others. All of them develop their roles and functions with a view to providing the best care and comfort, seeking a balance in their actions and conduct when caring for critically ill patients.

The nursing team carries out its tasks and functions in accordance with Law 7.498/86. The legislation in force reflects on the actions of nursing professionals and provides other measures. The nursing profession is full of functions, obligations, rights, and duties. Nurses are directly responsible for providing nursing care to seriously ill patients at imminent risk of death, and for making rapid decisions.

Within the multi-professional ICU team, it is the nurse who plans, organizes, coordinates, executes and evaluates nursing care services. Nurses are the professionals who survey their patients' state of health and illness, identifying risks using their own analysis tools and randomized searches using the Taxonomy of Nursing Diagnoses.[5]

Combining knowledge, practice and humanization are challenges for all nursing staff who care for critically ill patients. These professionals can carry out difficult tasks to maintain the life and health of these patients. Nursing is seen as scientifically grounded when it associates its actions and conduct with the Systematization of Nursing Care - SNC. Nurses are challenged to combine technical-scientific knowledge with the handling of heavy equipment and technologies,

and to support the team under their supervision/coordination in a safe manner, ensuring their effectiveness and a less severe impact when they are used.

**METHOD**

This is a review study, through research carried out in electronic databases: Brazil Scientific Electronic Library Online - Scielo, Latin American and Caribbean Literature in Health Sciences- Lilacs, Virtual Health Library - VHL through the Internet year 2022.

Inclusion criteria/filters were used: articles from the last five years with adherence to the theme of mechanical ventilation and comfort were selected; articles from up to the last five years of publication; complete articles; indexed in Portuguese. Incomplete articles, articles in foreign languages, theses, abstracts, academic dissertations, and other literature considered gray were excluded.

The following descriptors were used to retrieve the information: artificial respiration; patient comfort; NANDA - international nursing, all cataloged in the Health Sciences Descriptors (DECs).

**RESULTS AND DISCUSSION**

Based on the analysis of the articles studied, it is inferred that the perspective of comfort within the NANDA taxonomy (2021-2023) becomes descriptive and applicable, given its use in intensive care units for mechanically ventilated patients, bringing the nursing team, especially nurses as prescribers of such care, through their critical/reflective reasoning, the possibility of granting minimum comfort to these patients. Although invasive mechanical ventilation is the last resort used in some Intensive Care Units to reverse the complications of some pathologies, its early adoption in an attempt to preserve the life and comfort of patients in other ICUs has fallen prey to the same predictors of failure and death as the final consequences.[6]

The articles chosen for this study categorized invasive mechanical ventilation (IMV) in intensive care units. It was possible to observe that it is used to safeguard the lives of patients with Severe Acute Respiratory Syndrome (SARS). An analysis of the studies showed that this measure guarantees rest for the respiratory muscles and appropriate oxygenation.

It is emphasized that heavy technology is necessary to provide adequate support for the clinical condition of patients suffering from Severe Acute Respiratory Syndrome (SARS). Nursing staff are challenged to provide comfort when they provide direct care to patients in Intensive Care Units who are rapidly deteriorating clinically.

In the articles studied, the nursing team gave an adequate definition of a mechanical ventilator, considering it to be a breathing apparatus with positive or negative pressure that can maintain ventilation and oxygen administration for a prolonged period. Its use can be indispensable in cases of respiratory failure, increased carbon dioxide levels or basically a drop in oxygenation.

The results in all the articles emphasize that the parameters expected of patients include: normal breath sounds; normal arterial blood gas levels; acceptable vital signs; airway maintained; adequate ventilation with minimal mucus accumulation; no injury or infection; movement within the limits of capacity; effective communication through communication strategies; no complications; positive reactions to the stressful situation.

Since the emergence of mechanical ventilation as a modality of respiratory care, it has been observed that in many pathologies respiratory impairment is highly vulnerable to complications arising from its misuse, or ineffective supervision of the care provided to these patients. During the height of the COVID-19 pandemic, there was a great need for nursing staff to master knowledge about minimum comfort, as well as the handling of heavy ICU technology, such as the mechanical ventilator. Although invasive mechanical ventilation is the last resort used to reverse the complications of this disease itself, this measure has become practically necessary and routine in hospitals that meet the demands of the pandemic. Oxygenation is considered a physiological necessity which, when it is compromised and not treated properly, can lead to the patient's death.

The topic of patient comfort is considered somewhat common and already well discussed in the literature, but it takes on an even more complex connotation when it comes to clients with impaired gas exchange. The possibility of providing relief and care that promotes comfort is strongly corroborated in various nursing taxonomies, making this profession the pioneer in highlighting these studies and discussions throughout its history. Comfort as a goal in nursing care, especially in the use of heavy technology within the Intensive Care Unit, is a complex and

relevant topic in the field of knowledge, practice, and the socio-environmental context in which it is inserted.[7]

The combination of techniques and technologies for critically ill patients requires knowledge, training, improvement, and continuing health education. Nurses must be aware that their role is fundamental to the considerable effectiveness of invasive treatments, as well as the maintenance of heavy technologies since these professionals need to know how to operate mechanical ventilators and other electromedical equipment.

Daily life in ICUs is generally considered to be stressful and challenging, and during this pandemic, it is obvious that the attention, care, and responsibility given to professionals has become greater, creating more expectations and an exacerbated emotional burden and an even more conflicting environment between the actions of the teams and the comfort of the patient.

Control and rapid diagnosis of possible respiratory deterioration are essential to prevent patients from needing IMV. Non-invasive ventilation, also known as (NIV), offers ventilatory support without the use of an endotracheal tube, i.e., without the need to resort to invasive methods, avoiding possible complications resulting from invasive mechanical ventilation, so it can be understood that part of the comfort that should be provided to the client also comes from early diagnosis and assisted monitoring, seeking to prevent the use of invasive mechanical ventilation.

Invasive mechanical ventilation has become an essential therapeutic modality for people who have developed complications at the height of the COVID-19 pandemic in intensive care. It can be used to save the lives of patients with severe respiratory distress, as it guarantees rest for the respiratory muscles and proper oxygenation.[8]

Invasive mechanical ventilation is the appropriate form of treatment for patients with saturation below 92%, arterial O2 pressure below 65 mm/Hg with or without hypercapnia, respiratory rate > 30 ipm and clinical worsening. There are a considerable number of people who have had to undergo IMV and those who have died after treatment that is considered invasive and uncomfortable, even if the patients' cognitive abilities are affected, and in a few cases only their hearing remains. Humanization then becomes part of the daily lives of health professionals and the fact that patients are attached to electro-medical equipment already compromises the comfort needed for their treatment.

Humanization means: It is the process of becoming human. In other words, it's putting yourself in the other person's shoes. It means having empathy. So, the question is: what is the least painful or traumatic process for ICU patients? Is it possible to use mechanisms or strategies that enable more humanized and optimized care for these patients?

Considering the discussion regarding Katharine Kolcaba's theory of comfort, comfort is characterized as an immediate experience, corroborated by various sensations inherent to the human being. The sensation of relief, tranquility, and transcendence, thus consolidating the biopsychosocial-spiritual human being.[9]

The types of comfort defined within Katharine Kolcaba's theory are as follows: **a) Relief:** for the theorist it is presumed to be the experience and satisfaction of the sick person in the face of the provision of their needs. **b) Tranquility:** In her theory it is defined by the state of contentment and peace; **c) Transcendence:** Experienced condition of overcoming one's suffering and ailments.[9]

Comfort is a basic need of every human being. Nurses are challenged at certain times in their work to implement measures that relieve their clients' suffering, even though they know that they will be subjected to painful, invasive interventions, especially when it comes to critically ill patients in an Intensive Care Unit.

For Vanda Horta, nursing, as an integral part of the health team, programs states of equilibrium, prevents states of imbalance and reverses imbalance into equilibrium by assisting human beings in meeting their basic human needs.[10]

From the perspective of the nursing team, the difficulty lies in establishing comfort measures associated with the use of heavy technology. In Invasive Mechanical Ventilation, patient comfort is an important prerogative and should not be disregarded. A particular factor is linked to the misuse of invasive mechanical ventilation, which at certain times, instead of aiding treatment, can become dangerous and cause lung damage, biotrauma, oxytrauma, atelectrauma, volutrauma and barotrauma.

The ICU's multi-professional team is made up of professionals from a wide range of areas: nurses, nursing technicians, doctors, physiotherapists, nutritionists, speech therapists, psychologists, social workers, among others. All of them develop their roles and functions with a view to providing the best care and comfort, seeking a balance in their actions and conduct when caring for critically ill patients.

Nurses are responsible for combining the use of invasive technologies with technical and scientific knowledge, as well as ensuring effectiveness and an intervention capable of producing the least possible impact, promoting health and patient comfort.

The evolution of each clinical condition should be managed with care and particularity, to humanize the relationship between the health professional and their client. The results presented by patients affected by the coronavirus in serious condition, under invasive mechanical ventilation, must be observed from a different perspective, since the disease can be more lethal in certain groups considered to be at risk.

The use of the mechanical ventilator, as well as all the heavy technologies in Intensive Care, brings up a discussion on the theoretical and philosophical bases of the following nursing care sentence: How can comfort be associated with the use of heavy technologies for critically ill patients on invasive mechanical ventilation?

Comfort is a real and desired goal for the entire multi-professional team in Intensive Care Units, according to the sensations/perceptions that the entire care team experiences in the face of the associative identifications inherent in human nature. Through this mechanism, empathy arises, which makes it possible to "feel together", enabling reflection on what is being offered, as a real challenge called: direct care.[11]

From the perspective of nursing care, the provision of comfort requires an investment in conduct that minimizes discomfort. This is because, for example, within the pain scale there are levels and scores of pain attribution and intensity. Each individual responds to this stimulus in a peculiar way within their analysis and expression of sensations/perceptions. Considering the nursing diagnoses recommended by NANDA, the taxonomy brings the nuances of prescribing nursing care through the surveys evidenced by the nurse, facilitating the nursing process.[12]

In order for nurses to prescribe a care plan that provides comfort to patients on invasive mechanical ventilation, they need to be aware of the complications and iatrogenies that result from mechanical ventilation itself. In relation to the airways, there is a deficit in aspiration and reduced elimination of secretions, which favors infection.

Complications related to the endotracheal tube bring numerous possibilities of inconvenience to the patient: kinked tube, obstructed tube, pyriform sinus rupture, tracheal stenosis, tracheomalacia, selective intubation of the right source bronchus, failure to fill the

*cuff*, sinusitis, otitis media, laryngeal edema. Mechanical ventilator complications include: hypoventilation, hyperventilation, tension pneumothorax.

Complications considered physiological in the face of mechanical ventilation include: water and sodium chloride retention, left ventricular dysfunction causing severe hypotension, stress ulcers, paralytic ileus, gastric distension, nutritional deficit and starvation.

The prescription of the nursing care plan is categorized within the NANDA taxonomy (2021-2023), in its evidence providing us with the possibility of a range of nursing diagnoses, prognostic criteria/patient goals, and nursing interventions.[13]

Let's consider the diagnoses and comfort strategies below, from the perspective recommended by the NANDA taxonomy (2021-2023), their prognostic criteria and the nursing interventions applicable to the patient using mechanical ventilation:

**Table 1-** Nursing diagnoses applicable to patients using mechanical ventilation. NANDA (2021-2023).

| Nursing diagnoses: | Prognostic criteria: | Nursing interventions |
|---|---|---|
| Ineffective tracheobronchial elimination related to intubation, ventilation, pathological process, debilitated state, and fatigue. | The patient's ventilator will be maintained. | Auscultate the lungs every 2/2 hours - 4/4 hours and SQN; Aspirate secretions when snoring is evident. |
| Impaired gas exchange: related to retained secretions, a pathological process, or inadequate adjustments to the mechanical ventilator. | Arterial blood gases will be within normal ranges for the patient. | Monitor arterial gasometry after 10-30 min following obvious ventilator changes. Evaluate the patient's position, as certain positions reduce PaO2 and favor respiratory deficit. |
| Ineffective breathing pattern: related to fatigue, improper ventilator settings, excess secretions, or tube obstruction. | The patient will maintain an effective breathing pattern. | Evaluate ventilator alarms by the ventilator team and determine the cause immediately.<br><br>Assess pressure/leakage or obstruction. Keep a manual resuscitator at the bedside. |
| Pain related to mechanical ventilation, institution of | The sensation of pain will be relieved or controlled. | Maintain the position of the tube.<br>Position the patient with the head of the |

| | |
|---|---|
| endotracheal tube. | bed at 45°. Change the patient's position every 2/2 hours. Maintain sedation/analgesia. |

Source: NANDA (2021-2023).

**CONCLUSION**

It is concluded that the results of this study contribute to the field of nursing knowledge and induce the reader to think critically about the highly complex issue of comfort as a strategy for critically ill patients requiring mechanical ventilation. The results obtained show advanced nursing care practices, enabling nurses to make rapid decisions, with safe, appropriate conduct, empowering their assertiveness, supported by taxonomies and with a theoretical foundation based on scientific evidence.

Thus, this study contributes to broadening the reflection of health professionals in ICUs about providing comfort to mechanically ventilated patients, disseminating the appreciation of technique associated with humanization, so much discussed in our theories, adding to the fields of research, science, and technology, in a saturated theme evident in databases and searches, both in printed and virtual literary bases.

May this study reach and strengthen the comfort actions developed by health professionals who carry out their actions in intensive care units, bringing them valuable reflection between the writings and their conduct, aiming at important benefits for patient care and comfort.

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