

# Needs and perceptions of patients on mechanical ventilation: an integrative review

*Necessidades e percepções de pacientes em ventilação mecânica: revisão integrativa*

*Necesidades y percepciones de los pacientes en ventilación mecánica: revisión integradora*

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## ABSTRACT

**Objective:** to identify, from scientific publications, the needs and perceptions of patients undergoing invasive mechanical ventilation as regards comfort. **Method:** this integrative review searched the Medline, LILACS, BDeF and SciELO databases for publications between 2011 and 2021, using the descriptors Patient, Perception, Needs Assessment, Artificial Respiration, and Intensive Care Units. Articles in Portuguese, English and Spanish with their abstracts recorded in the data bases selected were included if the full publications were available at no cost. An adapted version of the CASP tool was applied to analyze the articles. **Results:** six articles addressing the subject were identified. The most important findings involved reports of perceptions of anxiety and the need for communication, dyspnea and sensations of suffocation from the presence of the artificial airway. **Conclusion:** patients on mechanical ventilation were observed to voice much broader needs and perceptions than those considered standard in the day-to-day intensive care environment.

**Descriptors:** Intensive Care Units; Respiration, Artificial; Needs Assessment; Patients; Perception.

## RESUMO

**Objetivo:** identificar, a partir de publicações científicas, as necessidades e percepções de conforto apresentadas por pacientes em ventilação mecânica. **Método:** revisão integrativa com levantamento bibliográfico nas bases de dados Medline, LILACS, BDeF e SciELO, entre 2011 e 2021, utilizando os descritores *Patient*, *Perception*, *Needs Assessment*, *Artificial Respiration*, *Intensive Care Units*. Foram incluídos artigos em português, inglês e espanhol, com os resumos disponíveis nas bases de dados selecionadas e disponíveis na íntegra sem custos. Para análise dos artigos, aplicou-se a ferramenta CASP adaptada. **Resultados:** foram identificados seis artigos com a temática abordada. Os achados mais relevantes envolveram relatos de percepções de ansiedade e necessidade de comunicação, dispnéia e sensação de sufocamento relacionado à presença de via aérea artificial. **Conclusão:** observou-se que pacientes em ventilação mecânica demandam necessidades e percepções bem mais amplas do que as convencionadas no ambiente cotidiano da terapia intensiva.

**Descritores:** Unidades de Terapia Intensiva; Respiração Artificial; Determinação de Necessidades de Cuidados de Saúde; Pacientes; Percepção.

## RESUMEN

**Objetivo:** identificar, a partir de publicaciones científicas, las necesidades y percepciones de comodidad presentadas por pacientes en ventilación mecánica. **Método:** revisión integradora con investigación bibliográfica en las bases de datos Medline, LILACS, BDeF y SciELO, entre 2011 y 2021, utilizando los descriptores: *Patient*, *Perception*, *Needs Assessment*, *Artificial Respiration*, *Intensive Care Units*. Se incluyeron artículos en portugués, inglés y español, con resúmenes encontrados en bases de datos seleccionadas y disponibles en su totalidad sin costo alguno. Para el análisis de los artículos se aplicó la herramienta CASP adaptada. **Resultados:** se identificaron seis artículos con el tema abordado. Los hallazgos de mayor relevancia incluyeron los relatos de percepciones de ansiedad y necesidad de comunicación, disnea y sensación de ahogamiento relacionados a la presencia de vía aérea artificial. **Conclusión:** se observó que los pacientes en ventilación mecánica demandan necesidades y percepciones más amplias que las convencionales en el ambiente cotidiano de terapia intensiva.

**Descriptores:** Unidades de Cuidados Intensivos; Respiración Artificial; Evaluación de Necesidades; Pacientes; Percepción.

## INTRODUCTION

Mechanical ventilation totally or partially replaces spontaneous ventilation and is indicated in acute or acute chronic respiratory failure. It improves gas exchange and reduces the work of breathing and can be used non-invasively or invasively using an endotracheal tube or tracheostomy cannula<sup>1</sup>.

The patient undergoing invasive mechanical ventilation needs an arsenal of equipment to ensure the maintenance of his/her condition, in addition to continuous doses of various drugs, especially sedatives/neuromuscular blockers, and other invasive devices characteristic of critical patients<sup>2,3</sup>.

Thus, the nursing care directed to the patient must consider the innumerable needs inherent to his/her clinical condition. In this context, the nurse becomes the protagonist in promoting comfort, considering that the management

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of patients using mechanical ventilation is an advanced nursing practice.<sup>2-4</sup> Therefore, the situational assessment of this patient and the implementation of nursing interventions that meet his/her comfort needs become the exclusive competence of nurses<sup>3,5,6</sup>.

Nurses need to support the Systematization of Nursing Care in a theory that organizes care based on their body of knowledge to provide quality care. Nursing has been establishing itself as a science with the emergence of its theories, which are considered products of science and give relevance to practice<sup>7</sup>.

Until the present day, the importance of the concept of comfort in nursing care has not yet been translated, except for the theory of Katherine Kolcaba, an author who is currently dedicated to the study of comfort in nursing care<sup>8</sup>.

Therefore, the theory of comfort provides the tools to promote nursing care to ensure that the patient's real needs are met. Comfort in nursing practices is the satisfaction of basic human needs for tranquility (a state of calm or contentment), relief (the condition of a person who has had a specific need satisfied), or transcendence (a condition in which the individual overcomes his/her problems and suffering) in the four contexts of experiences: physical, psycho-spiritual, social, and environmental<sup>7</sup>.

Given this scenario, the promotion of comfort is not restricted to the absence of pain or other physical discomforts. Especially in critically ill patients, their immobility and lack of verbal expression, caused, respectively, by the lowering of the level of consciousness due to the continuous use of sedatives and the presence of the endotracheal tube or tracheostomy cannula, sometimes generate a false impression that the patient does not demand other needs<sup>9</sup>.

In this sense, when addressing the issue of comfort for the client, one should also consider his/her environment, thus encompassing the circulation space, lighting, ventilation, noises, storage of equipment and devices, and, especially in the critically ill patient, the endotracheal tube connected to the respirator and the wires connecting the client to the machines. In addition, there is the dimension that extends to family members, who, sometimes, are displaced by the corridors, prevented from being with their loved ones outside visiting hours. All these contexts can arouse negative perceptions and even discomfort for the hospitalized client<sup>8</sup>.

Thus, the concept of comfort encompasses a much broader definition that includes four contexts that must be considered in the perception of the patient's needs: physical, psycho-spiritual, environmental, and socio-cultural<sup>10</sup>.

Identifying the critical patient's comfort needs is essential for implementing comfort measures that actually satisfy the patient's demands. In order to achieve good results, directing care practice, quality, and ethics based on the needs of patients and their families, the performance of adequate care, by nursing, to the critical patient is extremely important, as it directly contributes to the improvement of their clinical picture<sup>11</sup>. It is significant that nursing understands the needs and difficulties experienced by patients using mechanical ventilation so that the care process is aligned with their authentic expectations, always taking into account their singularities.

For this reason, we point out that the gaps that justify carrying out the research include the effective supply of subsidies – both systematic and holistic – and the need for in-depth knowledge on the subject in question. Identifying the relevant considerations for this directs and optimizes the nurse's decision-making in this dynamic.

Furthermore, ensuring care permeated by comforting measures gives credibility to the assistance, as it demonstrates the institution's commitment to quality care, promoting notoriety for the service provided. Finally, the identification of comfort needs also promotes the humanization of care, which favorably contributes to the patient's prognosis. In short, if patients are doing well, their families are doing well and, consequently, the institution does better, generating mutual benefits for all those involved in the process<sup>10,12</sup>.

Given the above, this study aimed to identify, based on scientific publications, the needs and perceptions of comfort presented by patients undergoing invasive mechanical ventilation.

## METHOD

This is a bibliographical, descriptive, integrative literature review type study, which consists of a specific method aiming to outline an analysis of the knowledge already built in previous research on a given topic, enabling the synthesis of various publications, and allowing the generation of new knowledge, based on the results presented by previous research. Thus, the methodological course of the review was defined in six stages<sup>13</sup>.

In the first stage, the acronym PICO<sup>14</sup> was used to construct the guiding question, with P being the population (mechanically ventilated patients), I the phenomenon of interest (needs and perceptions), and Co the context (adult intensive care unit). The following question was then raised: *What are the needs and perceptions presented by mechanically ventilated patients in an adult intensive care unit?* Next, search strategies and databases were defined.

The electronic bibliographic survey used the descriptors: *Patient, Perception, Needs Assessment, Artificial Respiration, and Intensive Care Units*. These descriptors were extracted from the Health Sciences Descriptors (DeCS) portal. The result of using these descriptors was a broad mapping carried out in the databases of the Virtual Health Library (VHL) Regional Portal, with its main structures carried out in the databases Medical Literature Analysis and Retrieval System Online (Medline), Latin American and Caribbean Health Sciences Literature (LILACS), Nursing Database (BDENF), and Scientific Electronic Library Online (SciELO). The Boolean operators AND (to intersect terms in the search strategy) and OR (to gather and group synonyms) were used for each database to associate the descriptors in the databases. The following strategy was used for Medline: (tw:(*Patient*)) AND (tw:(*Perception*)) AND (tw:(*Artificial Respiration*)) OR (tw:(*Needs Assessment*)) AND (tw:(*Artificial Respiration*)) AND (tw:(*Intensive Care Units*)). The same described limits were repeated for LILACS and BDENF. Finally, the strategy (tw:(*Needs Assessment*)) AND (tw:(*Artificial Respiration*)) AND (tw:(*Patient*)) was used for SciELO.

Articles that met the following criteria were included for analysis: published in Portuguese, English, and Spanish, with abstracts available in the selected databases, in the period between 2011 and 2021, available in full, online in the selected databases, with no cost to obtain, and that addressed the needs and perceptions experienced by mechanically ventilated patients. Dissertations, theses, monographs, abstracts in event annals, and expanded abstracts were established as exclusion criteria. Duplicate articles were also excluded. The search for articles in the databases was carried out by the researchers independently and occurred in May 2021.

The proposed period from 2011 to 2021 was used in the search, considering that this research did not cover information, concepts, or ideas that could, perhaps, be obsolete or inaccurate, negatively affecting the validity and judgments of this study. Obsolete knowledge may even affect the external validity of future studies that use it as a reference.<sup>15</sup> This attention is essential so that mistaken knowledge is not perpetuated or reinforced.

The changes faced by all areas of human knowledge in recent decades make the search for new ideas grow. However, this constant change can make knowledge already generated obsolete at a certain speed. Therefore, the research needs to have a well-defined temporal space delimitation to avoid theoretical outdatedness<sup>15</sup>.

Subsequently, a pre-selection of the articles was carried out by reading the title and abstract, considering the guiding question and the previously defined inclusion and exclusion criteria.

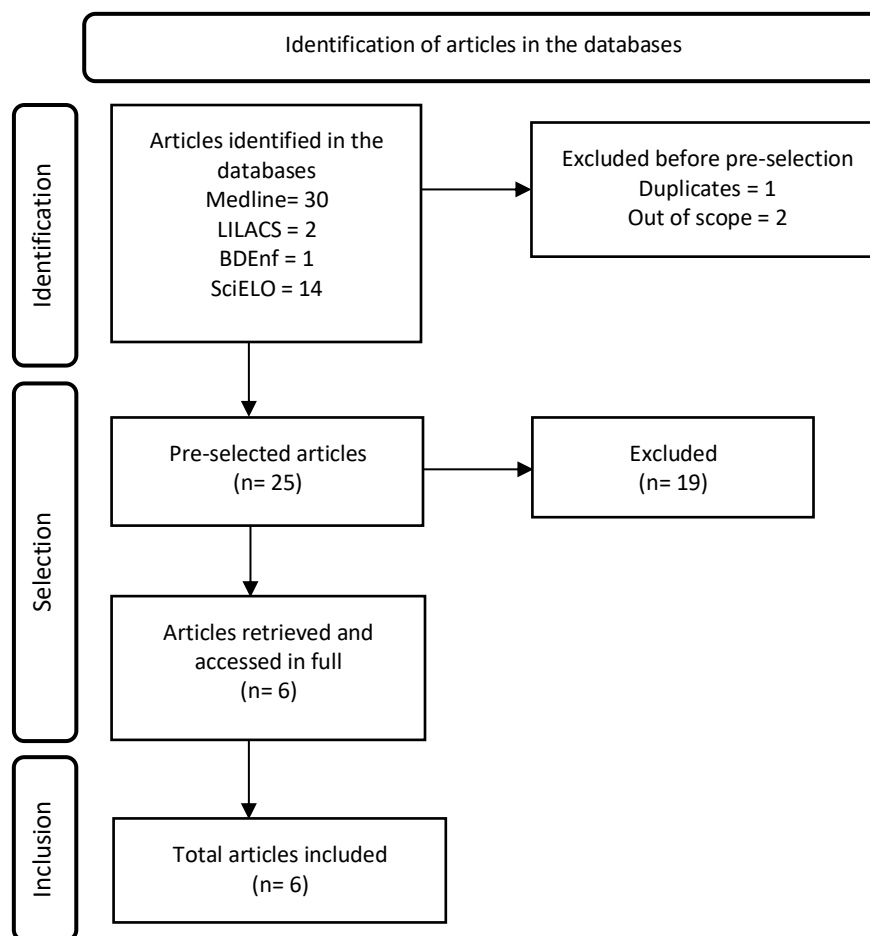
An instrument adapted from the Critical Appraisal Skills Program<sup>16</sup> was applied to assess the methodological quality of the included articles. Only publications classified as having good methodological quality and reduced bias remained at the end of the evaluation.

An instrument for collecting data from the articles was developed by the reviewers themselves based on a validated instrument<sup>17</sup> containing the following items: author/year, study design, a summary of the main needs and perceptions of mechanically ventilated patients addressed in the study in question, and classification of the level of evidence according to Oxford<sup>18</sup>. Figure 1 shows the selection flowchart.

The bibliographic survey in the databases resulted in the identification of 47 potentially relevant articles, with two articles being excluded due to language and one for being a duplicate. Twenty-five articles were retrieved after pre-selection by applying the inclusion criteria, of which six were accessed after reading the titles and abstracts. Thus, the final sample consisted of six publications, which were analyzed in full.

Mapping data were extracted from a form previously prepared by the authors to summarize the results, including authors, year of publication, the country where the research was conducted, study objectives, method, and results achieved.

Central elements and the units of analysis of each article were evaluated from this extraction, generating categorization by the similarity of the discussed subjects. These categories are presented through a narrative synthesis.



**FIGURE 1:** Article selection flowchart adapted from Preferred Reporting Items for Systematic Reviews and Meta-Analyses<sup>19</sup>. Rio de Janeiro, RJ, Brazil, 2021.

## RESULTS

Figure 2 shows the results in a summary table format, as well as the discussion, developed descriptively, allowing the reader to assess the applicability of the elaborated integrative review to reach the objective from the proposed method, that is, positively impacting the quality of nursing practice, providing subsidies to nurses in their decision-making<sup>17</sup>.

Regarding the period of publication, two articles were published (33.3%) both in 2019 and 2012. In 2014 and 2015, one article was identified each year (16.6%). The annual publication average for the studied period represents 1.5 articles per year.

Moreover, the vast majority of articles were published in international journals, with only the Escola Anna Nery Revista de Enfermagem of Brazilian nationality, evidencing the scarcity of publications on the subject at the national level.

The results show that the perceptions most reported by patients who used mechanical ventilation are related to anxiety (83.3%, n=5) and the need for communication (83.3%, n=5). Another more frequent report was dyspnea/feeling of suffocation (50%, n=3), and others of lesser frequency included perceptions associated with discomfort related to noise and alarms, immobility, changes in the usual routine, sleep disturbance, feeling of hunger, thirst, and pain, need for the presence of family members, and apprehensions caused by perceptions of death (33.3%, n=2 for each category).

Perceptions of cold and heat, excessive exposure to light, privacy and interaction needs, feelings of frustration, vulnerability, impotence, dependence, and uselessness for self-care, depersonalization, impatience, anguish, and nightmares, and, finally, injuries related to the endotracheal tube and its fixation (16.6%, n=1 for each category).

Authors/Year	Study design	Needs and perceptions of patients receiving mechanical ventilation	Level of evidence
Dornelles C, et al./2012 <sup>20</sup>	Qualitative investigation	The reported difficulties were especially related to the presence of the artificial airway: a feeling of suffocation, nausea, injuries resulting from the endotracheal tube, accumulation of secretions in the endotracheal tube and oral cavity, and aphonia. Needs for communication, thirst, and changes in personal routine were also mentioned.	4
Alpers L, et al./2012 <sup>21</sup>	Qualitative investigation	Perceptions of physical weakness, anxiety, impatience, and fear of dying and needs related to the presence and support of family members, need for communication, interaction, and mobilization were described.	4
Benedict N, et al./2014 <sup>22</sup>	Non-randomized prospective study	Patients reported generalized discomfort, frustration, panic, feelings of agitation and anxiety, difficulty resting/sleeping, noises and alarms, and average satisfaction with the experience in the intensive care unit.	2C
Fink RM, et al./2015 <sup>23</sup>	Quantitative and qualitative descriptive investigation	Most patients reported perceptions of pain, anxiety, panic, nightmares, anguish, and difficulty breathing.	4
Baumstarck K, et al./2019 <sup>24</sup>	Multicenter randomized controlled study	Discomfort perceived by patients: noise, excess light, discomfort related to sleeping in a place other than home, sleep deprivation, thirst, hunger, feeling cold, feeling hot, pain, limitation of movement due to catheters, tubes, or other devices, lack of privacy, anxiety, isolation, limited visiting hours, absence of cell phones, lack of information, shortness of breath, and feeling of depression.	1B
Pomar MH/2019 <sup>25</sup>	Qualitative systematic review	Perceptions of suffering, death, vulnerability, dependence, impotence, and uselessness in terms of self-care, inability to communicate, depersonalization, anxiety, and panic were described.	3A

FIGURE 2: Summary table of selected articles. Rio de Janeiro, RJ, Brazil, 2021.

## DISCUSSION

The development of this study allowed evidence that the most frequent reports are related to perceptions involving anxiety and the need for communication, in addition to reports of dyspnea and a feeling of suffocation due to the presence of an artificial airway.

Thus, anxiety was a predominant factor in the reported perceptions. This element was a consensus in practically all the studies analyzed and described in the table. Five out of the six articles included in the review emphasized the feeling of anxiety, presented as a perception of patients who used mechanical ventilation<sup>21-25</sup>.

In this perspective, studies have shown that anxiety is one of the mental disorders most routinely associated with clinical diseases and can be exacerbated by a set of factors such as uncertainty of prognosis, loss of independence, fears regarding procedures, and other disabilities, requiring adaptation to the new living conditions. In addition, anxiety can also promote physiological changes, hemodynamic fluctuations, and the need for higher doses of sedation and other drugs, which can further prolong the permanence of the condition<sup>26,27</sup>.

Regarding the need for communication, the absence or inefficiency of verbal expression is still one of the biggest challenges. The presence of an endotracheal tube, or tracheostomy cannula, or even the level of sedation are factors that negatively influence communication with the patient receiving mechanical ventilation. Prevented from expressing verbally their physical or emotional needs, patients may develop or foster an anxiety scenario. Thus, the best strategies for effective communication involving guidance and training of the team were observed, in addition to the use of communication instruments such as gestures, writing, or communication boards<sup>3,28</sup>.

Patients with an endotracheal tube or in the ventilator weaning process, in addition to compromised communication, have difficulty breathing or unsatisfactory breathing. Other authors have also pointed out that these patients present a feeling of suffocation, shortness of breath, and difficulty breathing<sup>20,23,25</sup>. These conditions are also intrinsically related to anxiety, one of whose manifestations is precisely short, unsatisfactory,

loud breathing that does not completely fill the ribcage. Thus, patients undergoing these procedures often report a feeling of suffocation, which corroborates the findings of this study. Thus, mechanical ventilation, the weaning process, and subsequent extubation, as procedures that alter normal breathing, can be considered in itself another source of anxiety<sup>29</sup>.

Other findings resulting from this research include a series of stressors present in the intensive care environment, also evidenced by other studies. The very characteristics of the intensive care unit are potentiating a certain amount of suffering. The intensive care unit is an environment feared by patients, with a succession of associated negative factors, among which are pain, discomfort, physical limitations and immobility, lack of privacy, invasive procedures, uncomfortable lighting, and constant noise<sup>22-24</sup>.

Three out of the six analyzed studies highlighted noise as an uncomfortable perception of patients receiving mechanical ventilation<sup>22-24</sup>. In addition, catheters and monitoring lines, sleep impairment, ineffective thermoregulation, isolation, and distancing from family and acquaintances are also negative agents. Fear of death or the feeling of death were also mentioned in these studies.

Three studies showed that patients who used mechanical ventilation reported a perception of fear of death during this process. The hospital environment itself is a stressor that, associated with vulnerability and the emotional and physiological changes present, makes these patients feel and/or fear death. Only the fact that the patient is using mechanical ventilation is already configured as an aggravating factor, which also covers his/her psyche. In addition, doubts or lack of explanation about their treatment, routine changes, and feelings of impotence for not having control over themselves are also relevant aspects that have a negative impact<sup>20,21,25</sup>.

Explaining to the patient in advance the procedures that will be performed becomes very important, as it contributes to reducing the discomfort, stress, anguish, and insecurity generated in these processes, as patients will be more aware of what is happening to them and around them<sup>8,30,31</sup>.

The suffering of patients is an important element emphasized by all the authors of the analyzed studies, as they all experience this feeling<sup>20-25</sup>. Therefore, it is necessary to pay attention to potential depressive conditions since depression – when not treated – can increase morbidity. All the aspects already mentioned, which negatively impact patients receiving mechanical ventilation, contribute to their suffering to some degree or extent<sup>29-31</sup>.

Identifying the needs and perceptions of mechanically ventilated patients is essential for nursing to be able to promote the humanization of the intensive care environment, in addition to proposing and implementing necessary measures to alleviate such factors. Thus, the findings of this study corroborate the concept of comfort described in four contexts: physical, psycho-spiritual, environmental, and socio-cultural<sup>10-12,31</sup>.

Finally, the analysis of the articles allowed the observation that patients receiving mechanical ventilation demand needs and perceptions that are much broader than those agreed upon in the daily environment of intensive care. Therefore, the data of this study have the potential to contribute to the identification of the real needs of patients receiving mechanical ventilation and, consequently, the implementation of comfort measures that fully meet their demands, thus confirming the humanization of nursing care.

Importantly, this identification is essential for nurses to direct their decision-making, thus optimizing the systematization of nursing care. The nursing team needs to be qualified, use appropriate resources, and provide the least hostile environment possible for the patient.

### Study limitations

The limitations of the study are mainly based on the reduced number of publications about the needs and perceptions of mechanically ventilated patients but are also related to the low level of evidence in most of the selected articles. In addition, the use of articles available only in full may have excluded some relevant studies.

### CONCLUSION

The most relevant findings involve reports of perceptions related to anxiety and the need for communication, in addition to reports of dyspnea and a feeling of suffocation related to the presence of an artificial airway. Moreover, most of the results are correlated in a way that one factor triggers another, sometimes generating a cascade of stressors that negatively influence the patient's experience with mechanical ventilation and intensive care.



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