

# Nurse and Accidental Extubation

Mini Review

Volume 1 Issue 3- 2024

## Author Details

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## Article History

Received: November 16, 2024 Accepted: November 19, 2024 Published: November 20, 2024

## Abstract

**Introduction:** Accidental extubation is understood as the unplanned and unintentional withdrawal of the ventilatory device. It can occur both by self-extubation, when the patient himself withdraws the ventilatory device, as well as by the management of the healthcare team.

**Objectives:** To describe, through the theoretical review, the role of the nurse in the face of accidental extubation.

**Methods:** A review of the literature on the articles published between 2010 and 2017 that reported the accidental extubation of the nurse was carried out. The search of the articles was carried out in the electronic databases Medline / Pubmed, Scielo and Lilacs and still in books. Results: 22 articles were found in Medline Pubmed, Lilacs and Scielo. After the initial reading of the titles and summaries of these articles 20 were excluded, since they were not very clear and did not meet the established criteria. Subsequently, with the reading of the articles in full, twelve were excluded because they were only a case study, 10 articles remained.

**Conclusion:** This review suggests that an implementation of a notification tool associated with the strengthening of the safety culture and health care qualification measures be carried out, and also to continue to monitor the causes in order to maintain the quality of the service, minimizing the occurrence of adverse events to the patient. Another important tool found in this review is the implementation of a guide for the prevention of accidental extubation since this factor favors the construction of quality indicators in the intensive therapy associated with the nursing team.

**Keywords:** Nursing, Extubation, Accident

## Introduction

Accidental extubation is understood as the unplanned and unintentional removal of the ventilatory device. It can occur either through self-extubation, when the patient himself removes the ventilatory device, or through the management of the health team. As an adverse event of care, when it occurs, it causes increased morbidity and mortality, and being related to nursing care, it requires reflection on the causes that led to its occurrence [1].

When accidental extubation occurs, reintubation consequently becomes necessary, impacting the increase in the time of mechanical ventilation, generating a longer hospital stay, increasing the risks of hypoxemia, atelectasis, ventilator-associated pneumonia (VAP), tracheal injury, hemodynamic instability, cardiac arrest and sometimes even death [Fontenele et al.].

When analyzing 65 professionals during 60 hours between January and March 2006, it was demonstrated that nursing technicians made more than 10% mistakes in questions related to the relationship be-

tween pneumonia and extubation, the bed bath procedure and the control of tracheal fixation and ventilatory circuits. Nurses had a 13% incidence of errors in care related to the fixation of the ventilatory device [2].

The moments of nursing care indicated by professionals as having the highest incidence of accidental extubation included bed baths; changing the patient's position; intra- or inter-hospital transport of the patient; changing the fixation; and mobilizing the patient to perform exams and/or procedures in bed [Neto et al.].

Unplanned extubation focuses on accidental extubation associated with nursing care. The general objective of this study is to describe, through theoretical review, the role of the nurse in the face of accidental extubation.

## Method

A literature review was carried out on articles published in the period 2010 to 2017 that reported accidental extubation of nurses. The



search for articles was carried out in the electronic databases Medline/ Pubmed, Scielo and Lilacs and also in renowned books on the subject. The keywords used were: extubation, accident, nursing and the corresponding terms in English and the search was limited to the Portuguese and English languages.

The inclusion and exclusion criteria were previously established with the aim of clearly defining the suitability of the literature found for this review study.

Articles that demonstrated the association between accidental extubation and nursing care in the case were included. The exclusion criteria were articles that were incomplete, in other languages, and articles that presented only the abstract.

The studies were pre-selected based on their titles and abstracts. Subsequently, the articles were read in full and their inclusion or exclusion was determined in this study according to the criteria established above. This study was carried out in 2017.

## Results

The various studies found during the survey are listed in Table 1 - Results of the Twenty-two articles were found in Medline, Pubmed, Lilacs and Scielo. After an initial reading of the titles and abstracts of these articles, 20 were excluded because they did not meet the established criteria. Subsequently, after reading the articles in full, twelve were excluded because they were only case studies, leaving 10 articles.

**Table 1** Search results for articles related to non-invasive ventilation and weaning.

Authors	Title	Year	Objective
Bar DCC [3]	Computerized nursing process and patient safety in intensive care based on ICNP(R) version 1.0: a clinical evidence for care	2012	To present partial results of the incidence of accidental extubation associated with nursing care
Barros [4]	Safety culture associated with continuing education: Strategy to reduce the number of accidental extubations	2017	Describe the impact of the safety culture associated with Continuing Education actions in reducing the number of accidental extubations and the causes of the adverse event in Intensive Care Unit.
Bhandari V [5]	Accidental extubations – are the infants trying to tell us something?	2010	To determine the incidence and risk factors for accidental extubation (AE) in a level 1 neonatal intensive care unit. tertiary.
Carvalho FL et al. [6]	Incidence and risk factors for accidental extubation in a neonatal intensive care unit.	2010	To conduct a bibliographic survey of scientific publications on accidental extubation in the electronic primary database, MedLine
Garcia PC [2]	Time of assistance of nursing in therapy unit Adult intensive care and quality of care indicators: correlational analysis.	2012	Identify the production scientific of nursing, using the PICO strategy to determine the best available evidence for client/family care regarding prevention of accidental extubation associated with nursing care at four moments: bed bath, changing decubitus, change of fixation and transport.



Pair LS	Delirium as a focus of attention for intensive care nurses.	2014	To present the experience of working to prevent accidental extubation through a guide for nursing considering the four moments of greatest occurrence: bed bath, transport, changing the fixation of the ventilator device and changing the decubitus.
Ramnalho Neto et al.	Accidental extubation and intensive nursing care	2014	Investigate the moments of care nursing of bigger incidence of accidental extubation.
Santos A [1]	Accidental Extubation Prevention Associated with Nursing Care for High Complexity Patients in Intensive Therapy Unit – Systematic Literature Review.	2010	Assess the adverse effects of extubations
Seine EMAB [7]	Peripheral venipuncture in premature newborns: challenges for nursing care and patient safety.	2015	Verify the conduct of nurses when faced with an incident involving medication, identify the feelings experienced in these situations and characterize the factors related to these events.

## Discussion

According to Padilha et al. 148 ICU nurses (76.7%) from 7 hospitals in the city of São Paulo were assessed using a questionnaire in 1997 and 1998 and found anxiety, helplessness and guilt to be the most common feelings, with 38.1%, 14.6% and 12.3%, respectively. The most frequent factor related to occurrences was employee negligence (23.1%) and it is known that these factors directly interfere with accidental extubation.

Ventura, Alves and Meneses [7] carried out a prospective cohort study to determine the incidence density of accidental extubation per 100 patient-days during the 23-month period, in 222 newborns on ventilatory assistance (VA) and the mean accidental extubation rate was 5.34/100 ventilated patient-days. The predictor variables that were associated with accidental extubation were the subsequent use of the oral and nasal route during ventilatory assistance (RR=4.73; 95%CI 1.92-11.60), duration of ventilatory assistance (every day RR=1.03; 95%CI 1.02-1.04) and the number of ventilated patient-days (RR=1.01; 95%CI 1.01-1.02)

Barros [4] analyzed a university hospital through a retrospective, longitudinal study with a quantitative approach from January 2016 to March 2017, where 39 accidental extubations occurred in the period analyzed: 36 incidents in 2016 and 3 events in 2017. There was a reduction in the number of events from October 2016, right after the period of actions related to safety culture and Continuing Education. A significant decrease in the event was observed in 2017 (1/month), when compared to the average per month in 2016 (3/month). Agitation, patient handling and sedation were the most frequent causes of accidental extubation.

Barra [3] through a retrospective observational study, prospective intervention, measuring accidental extubations before and after the implementation of a guide, in a population of 142 patients, 72 patients in the retrospective phase and 70 in the prospective phase, totaling 3771 days of ventilation. Data collected from medical records. 52.78% used a tracheal tube and 62% were between 71 and 90 years old, with an average number of days of ventilation of 26.5 days. There were six (3.27) extubations before and two (1.03) after the implementation of the guide and there was a decrease in the incidence of accidental extubation in the period studied, but this difference cannot be attributed to the guide because further studies are needed.

Parejo [8] when searching the literature on accidental extubation in critically ill patients, found only five studies that presented the relationship between accidental extubation by the patient and/or the health team. In all articles, extubations caused by the patient were always the most frequent, ranging from 78% to 91.7% of the total accidental extubations. Extubations caused by the health team also ranged from 8.3% to 22% of the total. No publications by Brazilian nurses were found correlating accidental extubation with nursing care.

Santos and Cruz [1] suggest that preventive measures should be adopted during the four moments of nursing care with the highest incidence of accidental extubation to promote a reduction in the occurrence and worsening of this adverse event. Therefore, new research is needed to provide support for the development and implementation of prevention mechanisms, so that nurses can reflect on their practices regarding the care of highly complex patients.

Despite the growing recognition of its safety and effectiveness, non-invasive respiratory support still needs to be actively encour-



aged, being a preventive factor for accidental extubation as reported by Bhandari [5].

Sena [9] uses a preventive guide for accidental extubation associated with nursing care for the four moments of greatest incidence, which are: bed bath, transport, fixation change and position change, to promote prevention. Carvalho et al. [6] also warn that measures to reduce incidence should be adopted and earlier extubation recommended, as it reduces accidental extubations.

## Conclusion

This review suggests that a notification tool be implemented, associated with strengthening the safety culture and care qualification measures, and that the causes should continue to be monitored in order to maintain the quality of the service, minimizing the occurrence of adverse events to the patient.

Another important tool found in this review is the implementation of a guide to preventing accidental extubation, as this factor favors the construction of indicators of quality in intensive care associated with the nursing team.

Nursing care must provide safety to the patient and the team, thus contributing to the patient's progress, preventing complications, reducing the length of hospital stay and providing benefits to the patient.

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