ISSN-e [2675-5602]

Global Academic Nursing Journal

ORIGINAL ARTICLE

Nursing knowledge regarding laryngeal mask implementation technique

Conocimientos de enfermería sobre la técnica de implementación de mascarilla laríngea

Conhecimento da enfermagem referente à técnica de implantação da máscara laríngea

Julia Grasiela Botteon[1]
ORCID: 0009-0009-8270-1823
Manuella Andrade Sbrilli[1]
ORCID: 0009-0009-9485-2127
Carlos Cesar Barbosa[1*]
ORCID: 0009-0007-2466-8266
Lívia Cristina Scalon da Costa Perinoti[1]
ORCID: 0000-0002-7056-8852
Rita de Cássia Gomes[1]
ORCID: 0009-0002-2516-3984

[1]Centro Universitário das Faculdades Associadas de Ensino. São Paulo, Brazil.

How to cite this article:
Botteon JG, Sbrilli MA, Barbosa CC, Perinoti LCS, Gomes RC. Nursing knowledge regarding laryngeal mask implementation technique. Glob Acad Nurs. 2024;5(2):e427. https://dx.doi.org/10.5935/2675-5602.20200427

***Corresponding author:**
carlos.barbosa@prof.fae.br

Submission: 04-15-2024
Approval: 05-20-2024

Abstract

This study aimed to identify nurses' knowledge of legislation, training, indications, and contraindications for the use of laryngeal mask airways in pre-hospital and in-hospital emergencies. This is a descriptive, prospective, and quantitative study. A total of 164 responses from nurses were collected, and the researchers developed a data set. The results are presented graphically with the responses provided by the nurses who participated in our data collection. The results of this study highlighted that trained nurses have legal support and are essential for early airway management with laryngeal mask airways in emergencies. However, weaknesses remain regarding the use of laryngeal mask airways by nurses, demonstrating that this procedure is still underperformed by nurses in both in- and out-of-hospital settings.

Descriptors: Laryngeal Masks; Intubation; Emergency; Nursing; Professional Training.

Resumén

El objetivo de este estudio fue identificar el conocimiento de las enfermeras sobre la legislación, la formación, las indicaciones y las contraindicaciones para el uso de la vía aérea con mascarilla laríngea en emergencias prehospitalarias y hospitalarias. Este es un estudio descriptivo, prospectivo y cuantitativo. Se recogieron 164 respuestas de enfermeras y los investigadores desarrollaron un conjunto de datos. Los resultados se presentan gráficamente, con las respuestas proporcionadas por las enfermeras que participaron en nuestra recopilación de datos. Los resultados de este estudio destacaron que las enfermeras formadas tienen apoyo legal y son esenciales para el manejo temprano de la vía aérea con mascarilla laríngea en emergencias. Sin embargo, persisten debilidades con respecto al uso de la vía aérea con mascarilla laríngea por parte de las enfermeras, lo que demuestra que este procedimiento aún es poco realizado por las enfermeras tanto en entornos hospitalarios como extrahospitalarios.

Descriptores: Mascarillas Laríngeas; Intubación; Emergência; Enfermería; Formación Profesional.

Resumo

Objetivou-se identificar os conhecimentos dos enfermeiros sobre a legislação, capacitações, indicações e contraindicações sobre o uso da máscara laríngea em emergências no serviço pré-hospitalar e intra-hospitalar. Trata-se de um estudo descritivo, prospectivo e de abordagem quantitativa. Foram coletadas 164 respostas de enfermeiros, construído pelos pesquisadores deste estudo. Os resultados estão sendo apresentados em forma de gráfico, com as respostas fornecida pelos enfermeiros que participaram de nossa coleta de dados. Os resultados encontrados nesta pesquisa ressaltaram que os enfermeiros treinados possuem respaldo legal e são fundamentais no manejo precoce de vias aéreas com máscara laríngea em emergências. Contudo, ainda é evidente fragilidades referentes à aplicação de máscara laríngea por enfermeiros, evidenciou-se que é um procedimento ainda pouco realizado por enfermeiros em ambientes intra e extra-hospitalares.

Descritores: Máscaras Laríngeas; Intubação; Emergências; Enfermagem; Capacitação Profissional.

Introduction

The laryngeal mask airway (LMA) is a supraglottic device considered the most widely used and has revolutionized airway management. Since its introduction into clinical practice, its applications have expanded considerably. Today, in addition to surgery, it is used in many settings, such as outpatient clinics, intensive care units (ICUs), and emergency rooms (ERs), among others[1].

The placement of the LMA in Brazil is exclusive to nurses, used in patients with imminent risk of death, and can be in the pre-hospital or intra-hospital environment, if they are properly trained in a theoretical-practical course[2].

Critical events are situations that require active airway management, which can occur at any time in the in-hospital or pre-hospital setting. In this scenario, the LMA plays a crucial role and is recognized as an alternative when adequate ventilation with a bag-valve-mask (BVM) device is impossible, medical staff are absent, orotracheal intubation (OTI) is difficult, and difficult airway management is difficult[1].

The emergency department nurse must be prepared and able to provide acute respiratory care, even if authorized to perform the procedure, in addition to being a reference for the team together with the medical professional in this intervention, he/she must act confidently and systematically, taking into account that the risk of clinical instability and progression to cardiorespiratory arrest (CPA) is imminent and his/her direct intervention can prevent the patient's condition from worsening[3].

This revolutionary therapeutic procedure can be performed by trained nurses in addition to physicians. The Federal Nursing Council (COFEN) supports and empowers nurses to use LMA in in-hospital and pre-hospital settings in acute respiratory emergencies through Resolution No. 641/2020[4]. However, it is important to emphasize that to perform the procedure, the professional must be qualified and have the technical knowledge to identify the need to guarantee an advanced airway, thus providing a significant improvement in the quality of care provided to the patient in the event of immediate intervention. Especially in the pre-hospital environment, the use of LM by nurses is considered a great contribution, given the possibility of guaranteeing the patient a greater chance of survival[3].

In 1983, a British anesthesiologist named Dr. Archie Brain conceived and created the LMA. Initially, it was intended to induce anesthesia for a short period of time. It then began to be used as an alternative airway device to the face mask and the IOT. However, as studies progressed and technologies evolved, and its ease of use in critically ill patients improved, the North American Society of Anesthesiologists determined that this product could be used in difficult-to-access airway protocols. The LMA can provide better ventilation quality compared to a mask alone and requires less airway instrumentation than tracheal intubation. Since then, it has been widely used in surgeries requiring general anesthesia and as a rescue device for difficult airways[5].

The main advantage of LMA over tracheal intubation (TI) is related to the insertion technique. LMA insertion is performed without the need for a laryngoscope, thus speeding up airway access. In general anesthesia, a smaller amount of medication is used for LMA insertion, eliminating the need for neuromuscular blockers. The ETI technique is extremely reflexogenic and can cause responses such as tachycardia, hypertension, and increased intracranial and intraocular pressure. These responses are significantly reduced with the use of LMA. With ETI, it is common for patients to experience throat discomfort postoperatively. However, complaints are rare after LMA insertion, reducing the number of analgesics used[6].

The LMA has some advantages over the endotracheal tube, such as: less contact with the glottis and no contact with the trachea; quick and easy insertion; there is no need for direct laryngoscopy for its insertion, providing greater comfort to the patient and requiring lower doses of anesthetics during the induction phase; lower incidence of coughing, odynophagia, dysphonia, and dysphagia; some models allow autoclaving, as it is made of silicone material; it can be inserted with the neck in flexion; it does not run the risk of selective intubation in main bronchi or esophagus; it allows the maintenance of the patency of the areas in situations of difficult tracheal intubation; and it allows for rapid awakening[7].

Because it is considered a high-risk procedure, Law No. 12,842 of July 10, 2013, regulates the practice of medicine and defines tracheal intubation as an activity exclusive to physicians. In the presence of respiratory failure, the nursing team is responsible for continuous patient care, and the nurse is responsible for coordinating activities and performing more complex activities, as established in Law No. 7,498/86, regulated by Decree 94,406/87. In 2020, the Federal Nursing Council, within the scope of its functions, regulated Resolution No. 641/2020, highlighting that in certain situations, extraglottic devices are exclusive to nurses in cases of risk of patient death and within the assessment of acute respiratory failure[2-4].

According to the American Heart Association (AHA), every professional responsible for this procedure must have adequate training and validated experience[8]. It is worth noting that, currently in Brazil, formal emergency training courses train nurses for supraglottic intubation (laryngeal mask airway), and this achievement is supported by COFEN Resolution No. 641/2020[4].

Laryngeal mask airway insertion is extremely important in the management of difficult airways and rapid advanced airways, with the potential to reduce complications and mortality rates. Because its use requires training, we opted to conduct a data survey to obtain results regarding the knowledge and training of nurses working in pre-hospital and in-hospital settings. The aim was to identify nurses' knowledge about legislation, training, indications, and contraindications regarding the use of the laryngeal mask in emergencies in pre-hospital and intra-hospital services.

Methodology

This is a descriptive, prospective study with a quantitative approach. Quantitative research aims to

analyze and measure data on the phenomena under study, while descriptive studies describe these data without any interference from researcher[9].

The chosen topic is the study of nurses' knowledge regarding the practice of applying the laryngeal mask airway installation and implementation technique, as well as its indications and contraindications. The guiding question was developed using the PICO strategy, where P (population/problem): nurses; I (interest): indications; and Co (context): application of the laryngeal mask airway installation technique. Thus, the guiding question for the development of the research is: "What is nurses' knowledge regarding the laryngeal mask airway, its indications and contraindications?".

Graduate nurses were invited to participate in the study. The study population was based on convenience, and nurses who declined to participate were excluded.

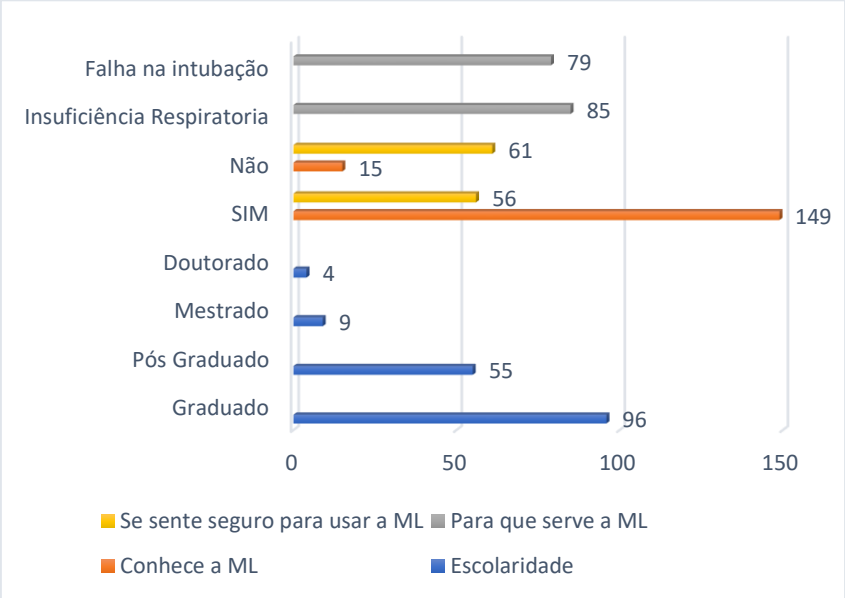
The research was conducted in the East region of São Paulo State, using an online form consisting of a characterization form and seven objective questions. Data collection was conducted between December 2023 and February 2024 by the researchers responsible for the research.

The project was submitted to the Research Ethics Committee of the University Center of Associated Colleges – FAE (UNIFAE), which issued Opinion No. 6,566,251, respecting the confidentiality of information and anonymity of those involved, in addition to the standards regarding ethics in research involving human beings, being aware of the objectives and providing subsidies for the implementation and compliance with the requirements of the National Health Council Resolution No. 466/12 and its complementary ones.

Results

A survey was conducted based on the responses of 164 male and female nurses between the ages of 18 and 50. The results of our survey showed that 58.54% of the professionals had a nursing degree without any specific specialization courses, and 64% had not completed any additional training. This suggests that many nurses may not have received specialized training in procedures such as laryngeal mask airway use during their training or in additional courses.

Graph 1. Nurses' knowledge regarding the laryngeal mask airway. São Paulo, SP, Brazil, 2024



Note: Falha na intubação - Intubation failure. Insuficiência respiratória - Respiratory failure. Não – No. Sim – Yes. Doutorado – Doctorate. Mestrado – Master's. Pós-graduado – Postgraduate. Graduado – Undergraduate. Se sente seguro para usar a máscara laríngea - Feel safe using the laryngeal mask. Para que serve a máscara laríngea - What is the laryngeal mask airway for. Conhece a máscara laríngea - Do you know the laryngeal mask. Escolaridade – Education.

The vast majority (90.9%) reported familiarity with the laryngeal mask airway; however, only a small difference of 3.6% demonstrated clear knowledge of its proper indications. This suggests that, although nurses may be aware of the existence and purpose of the laryngeal mask airway, they may not fully understand when it should be used.

The survey identified a high level of uncertainty among participating nurses, especially regarding the use and indications for laryngeal mask airways. A lack of confidence was also evident, with 37.2% of nurses indicating that they do not consider themselves capable of performing the laryngeal mask airway insertion procedure. This suggests an urgent need for specific training and development to ensure nurses feel comfortable and confident using this device.

To avoid these types of problems, nurses must receive adequate training on laryngeal mask airway use, including detailed instructions on how to position it correctly, monitor the patient during use, and manage any complications. Furthermore, nurses must remain up to date on guidelines and best practices related to laryngeal mask airway use to ensure patient safety and well-being. These results highlight the importance of continuing education and professional development to ensure that nurses are

adequately prepared to perform essential procedures, such as laryngeal mask airway use, thus providing safe and effective patient care.

Discussion

The laryngeal mask airway offers several advantages, including ease of insertion and the absence of the risk of endotracheal intubation. However, its use poses uncertainty regarding the risk of aspiration and the difficulty in achieving high ventilation pressures in patients. Taking these and other considerations into account, this device should be replaced with an endotracheal tube whenever possible and by a trained professional[10].

The following are exclusive to nurses: planning, organizing, coordinating, executing, and evaluating nursing care services; in addition, direct nursing care for patients in serious and life-threatening conditions and nursing care of greater technical complexity that requires scientific knowledge and the ability to make immediate decisions[11].

It is the nurse's technical and legal role to master the use of equipment capable of reducing and/or eliminating disturbances in respiratory function in urgent and emergency situations, citing the laryngeal mask as one of these pieces of equipment[3].

According to the American Society of Anesthesiologists (ASA), during general anesthesia, as in many emergencies, the primary objective is successful airway management. Orotracheal intubation is considered the gold standard; however, it requires proficiency and can often be difficult to manage. Therefore, the importance of less invasive alternative devices, such as the laryngeal mask airway, is emphasized[12].

The laryngeal mask airway has numerous benefits when applied within its indications and by a trained professional, however, there are some situations in which this equipment should not be used, namely: patients at risk of regurgitation; patients with low lung compliance or high resistance to ventilation (chronic obstructive pulmonary disease - COPD), pulmonary fibrosis, bronchospasm, chest trauma, pulmonary edema, morbid obesity); patients with difficulty opening the mouth (< 2 cm); patients with pharyngeal pathologies; patients with obstruction in the larynx or below; patient on selective lung ventilation[10].

Regarding the ethical and legal aspects of the use of laryngeal masks by nurses, COFEN Resolution No. 641/2020 addresses the use of Extra Glottic Devices (EGDs) by nurses in urgent and emergency situations, in both intra- and pre-hospital settings. In the first article of this resolution, we state that "[...] the use of Extra Glottic Devices (EGDs) for airway access is exclusive to nurses, within the nursing team, exclusively in situations of imminent risk of death"[4].

Regarding the use of the laryngeal mask in an emergency situation performed by a Nurse, we have the COREN/RS decision no. 128/09 which states in its first article: In a proven emergency situation, in which the Nurse professional is exercising his/her functions, in the absence of the Medical professional, he/she can and must provide care, taking into account his/her knowledge, technical and scientific competence and the correct indication for the use of the device in question, so that his/her procedure does not incur a risk of damage to the patient's physical integrity, observing what is recommended by the Law of Professional Practice and the Code of Ethics for Nursing professionals[13].

After a critical and in-depth reading of the collected data, it was possible to identify the main deficiencies in the subject, which are: nurses' weaknesses in laryngeal mask airway insertion; lack of training/ qualification; failure to perform the procedure; lack of knowledge about indications for laryngeal mask use; and scarcity of studies. The discussion was developed through a critical evaluation of the results obtained through content analysis. Insertion of the laryngeal mask airway for airway management is of fundamental importance in critical situations and requires training[14].

Considering that these professionals need to seek additional training in short-term specialization courses, however, it is a minority that is interested in the least and thus increasing the lack of training and knowledge of professionals for insertion of the supraglottic device, which is a procedure supported by law to be performed by trained nurses[15]. The use of LMA by nurses is still little experienced in intra- and extra-hospital care. A worrying deficit found is the lack of necessary knowledge of the indications for the use of LMA, and the performance of the technique. Another fact that imputes fragility in the practice of inserting an LMA by nurses is the scarcity of studies on the subject.

The lack of studies on LM insertion by nurses shows that the practice is deficient to date, and publications on this topic are essential for the improvement of professionals during cardiorespiratory arrest and respiratory emergencies[16].

Conclusion

LMA insertion is extremely useful in the management of difficult airways and rapid advanced airways, reducing complications and mortality rates. Because it is a rapid insertion device, it is highly effective in securing the airway, facilitating management and adherence to guidelines during cardiopulmonary resuscitation in patients in cardiorespiratory arrest, minimizing interruption of chest compressions, and positively impacting the perfusion of vital organs during cardiorespiratory arrest. Furthermore, it reduces the duration of mechanical ventilation and length of ICU stay, improving the prognosis of critically ill patients. The results of this study highlighted that trained nurses have legal support and are essential for early airway management with laryngeal mask airways in emergencies, contributing to reduced mortality and increased survival rates for critically ill patients. However, weaknesses remain regarding the use of LMA by nurses, demonstrating that it is still rarely performed by nurses in both in- and out-of-hospital settings. There is a lack of technical knowledge and indications for LMA use by nurses. It is emphasized that there is an immediate need for practical training and qualifications to improve the technical skills of nursing professionals who are the promoters of care and seek to preserve life.

References

1. Noronha Silva GC, et al. Inserção da máscara laríngea por enfermeiros: revisão integrativa da literatura. Rev Eletrônica Enferm. 2022;24.
2. Sé ACS, et al. Conhecimento de enfermeiros residentes sobre manejo de via aérea com inserção de máscara laríngea. Glob Acad Nurs J. 2021;2(Spec 2):e109.
3. Bruno SMOS, Nunes NAH. Atuação do enfermeiro emergencista manejo da máscara laringe. Rev Multidiscip Saúde. 2021;2(4):125.
4. Conselho Federal de Enfermagem (COFEN). Resolução COFEN nº 641/2020, de 02 de julho de 2020. Utilização de dispositivos extraglóticos (DEG) e outros procedimentos para acesso à via aérea, por Enfermeiros, nas situações de urgência e emergência, nos ambientes intra e pré-hospitalares. Brasília; 2020.
5. Van Zundert TC, Brimacombe JR, Ferson DZ, Bacon DR, Wilkinson DJ. Archie Brain: celebrating 30 years of development in laryngeal mask airways. Anaesthesia. 2012;67(12):1375-1385. doi:10.1111/anae.12003.x
6. Brimacombe J. The advantages of the LMA over the tracheal tube or facemask: a meta-analysis. Can J Anaesth. 1995;42:1017-23.
7. Matins R, Braz JRC, Mori ARM. Máscara laríngea. Uma nova opção para a manutenção da permeabilidade das vias aéreas superiores. Rev Bras Otorrinolaringol. 1999;60-3.
8. American Heart Association (AHA). 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2020;142(24 Suppl 2):S337-57.
9. Polit DF, Beck CT. Fundamentos de pesquisa em enfermagem: avaliação de evidências para a prática da enfermagem. 9ª ed. Porto Alegre: Artmed; 2019.
10. Soares JRR. Máscara laríngea: aspectos gerais. 2020. Monografia (Graduação em Enfermagem) – Centro Universitário de Lavras, Lavras, MG; 2020.
11. Conselho Federal de Enfermagem (COFEN). Nota Técnica – Recomendações de Biossegurança no uso de dispositivos Extra Glóticos pelo Enfermeiro no atendimento de urgência. Brasília (DF); 2020.
12. Metterlein T, et al. Uma comparação de vários dispositivos supraglóticos para intubação traqueal guiada por fibra óptica. Rev Bras Anestesiol. 2017;67:166-71.
13. Conselho Regional de Enfermagem (RS). Decisão COREN-RS n.º 128/09. Dispõe sobre uso de máscara laríngea em situação de emergência realizado por enfermeiro. Brasília (DF); 2009.
14. Marino TA, et al. Inserção da máscara laríngea, atribuição do enfermeiro(a) em situações de emergência. Rev Semanas Acad. 2017;4(4).
15. França TCML, Tenório HAS. Manuseio das vias aéreas com uso da máscara laríngea por enfermeiro em situações de emergência: revisão integrativa. Braz J Health Rev. 2023;6(1):886-97.
16. Santos SM, Cruz I. Prática de enfermagem baseada em evidências sobre a atuação do enfermeiro no manejo de vias aéreas durante parada cardiorrespiratória em paciente adulto. J Spec Nurs Care. 2020;12(1).