Revista de Enfermagem UFJF

https://periodicos.ufjf.br/index.php/enfermagem

Revista de Enfermagem UFJF

ORIGINAL ARTICLE

Laryngeal mask airway management: skills assessment and simulation design

Máscara laríngea no manejo das vias aéreas: avaliação de habilidades e do design da simulação

Máscara laríngea en el manejo de las vías aéreas: evaluación de habilidades y diseño de simulación

Leandra de Brito Barbosa Santos Campos[1], Daniele Knopp Ribeiro[1], Carolina Alves Matos de Menezes[1], Fábio da Costa Carbogim[1]

Information of the Article:
Received on: 06/01/2025
Accepted on: 08/26/2025

Corresponding author: Carolina Alves Matos de Menezes. E-mail: carolinaalvesmatoss@gmail.com

ABSTRACT

Objective: To evaluate the technical performance of nursing students in laryngeal mask airway insertion and analyze the quality of the instructional design of the clinical simulation scenario used to develop this skill. **Method:** This was a quantitative, descriptive study involving 25 nursing students, selected by convenience from an undergraduate nursing program. Data collection occurred in two stages: a theoretical knowledge test on the technique, followed by a lecture; and an in-person clinical simulation, with practical assessment by trained observers using a validated checklist and the Simulation Design Scale. Data were analyzed using descriptive statistics (frequencies, means, and standard deviations). **Results:** Of the 25 participants, only 16% reported prior knowledge of the technique. Technical performance was considered adequate, with scores above 70% on the essential checklist items. The evaluation of the simulated scenario indicated higher means in the problem-solving (5.79) and realism (4.70) factors, on a scale of 1 to 7. **Conclusion:** The students demonstrated satisfactory performance and a positive perception of the simulation design. Clinical simulation proved to be an effective tool for teaching invasive skills and for critical and safe training in Nursing.

DESCRIPTORS:

Education Nursing; Laryngeal Masks; Simulation Training; Nursing.

[1] Universidade Federal de Juiz de Fora. Juiz de Fora, Minas Gerais, Brazil.

CC BY

RESUMO

Objetivo: Avaliar o desempenho técnico de estudantes de Enfermagem na inserção da máscara laríngea e analisar a qualidade do *design* instrucional do cenário de simulação clínica empregado para o desenvolvimento dessa habilidade**. Método**: Estudo quantitativo, descritivo, com 25 estudantes de Enfermagem, selecionados por conveniência entre discentes de disciplina prática. A coleta de dados ocorreu em duas etapas: aplicação de teste de conhecimentos teóricos sobre a técnica, seguida de aula expositiva; e simulação clínica presencial, com avaliação prática por observadores treinados, utilizando *checklist* validado, além da aplicação da Escala de *Design* de Simulação. Os dados foram analisados por estatística descritiva (frequências, médias e desvios-padrão). **Resultados:** Dos 25 participantes*,* apenas 16% relataram conhecimento prévio sobre a técnica. O desempenho técnico foi considerado adequado, com acertos superiores a 70% nos itens essenciais do *checklist*. A avaliação do cenário simulado indicou maiores médias nos fatores resolução de problemas (5,79) e realismo (4,70), em escala de 1 a 7. **Conclusão**: Os estudantes demonstraram desempenho satisfatório e percepção positiva do *design* da simulação. A simulação clínica mostrou-se ferramenta eficaz para o ensino de habilidades invasivas e para a formação crítica e segura em Enfermagem.

DESCRITORES:
Educação em Enfermagem; Máscaras Laríngeas; Treinamento por Simulação; Enfermagem.

RESUMEN

Objective: Evaluar el desempeño técnico de estudiantes de Enfermería en la inserción de la mascarilla laríngea y analizar la calidad del diseño instruccional del escenario de simulación clínica utilizado para desarrollar esta habilidad. **Método**: Estudio descriptivo cuantitativo con 25 estudiantes de Enfermería, seleccionados por conveniencia entre estudiantes de cursos prácticos. La recolección de datos se realizó en dos etapas: una prueba de conocimientos teóricos sobre la técnica, seguida de una conferencia; y una simulación clínica presencial, con evaluación práctica por observadores capacitados utilizando una lista de verificación validada y la Escala de Diseño de Simulación. Los datos se analizaron mediante estadística descriptiva (frecuencias, medias y desviaciones estándar). **Results:** De los 25 participantes, solo el 16% reportó conocimiento previo de la técnica. El desempeño técnico se consideró adecuado, con puntajes superiores al 70% en los ítems esenciales de la lista de verificación. La evaluación del escenario simulado indicó promedios más altos en los factores de resolución de problemas (5.79) y realismo (4.70), en una escala del 1 al 7. **Conclusión:** Los estudiantes demostraron un desempeño satisfactorio y una percepción positiva del diseño de la simulación. La simulación clínica demostró ser una herramienta eficaz para la enseñanza de habilidades invasivas y para el entrenamiento crítico y seguro en Enfermería.

DESCRIPTORES:
Educación en Enfermería**;** Máscaras Laríngeas; Entrenamiento Simulado; Enfermería.

INTRODUCTION

The laryngeal mask (LM), a supraglottic device employed for pulmonary ventilation, is regarded as a safe alternative in emergency situations, particularly when ventilation with a face mask proves ineffective or technically challenging to perform[1]. Its use may precede orotracheal intubation, serving as a temporary, safe, and easily inserted measure[2]. Since it is not considered a definitive airway, unlike orotracheal intubation, its employment must be contextualized according to the patient's clinical

condition, equipment availability, and the training of the healthcare team involved in care delivery[1-2].

The LM is a supraglottic device with an inflatable cuff at its distal end, which, once inflated, adapts to the posterior pharynx, sealing the tongue base and the laryngeal inlet[4]. Among its advantages compared with mask ventilation are reduced interruptions of chest compressions during cardiopulmonary resuscitation and decreased risk of gastric regurgitation[2,4]. Since 2020, the use of extraglottic devices such as the LM has been regulated for nursing practice by the Federal Nursing Council[5]. Nevertheless, despite such regulation, data regarding the frequency of LM use in clinical nursing practice remain scarce, which highlights the need for specific and ongoing training.

According to international guidelines, including those of the American Heart Association (AHA)[6] and the European Resuscitation Council (ERC)[7], safe and effective use of the LM requires technical mastery, anatomical knowledge, and rapid decision-making, which justifies the emphasis on teaching strategies directed toward developing these competencies.

Considering the recent inclusion of the LM in regulated nursing practices in Brazil and its advantages in airway management during critical situations, it is essential to reflect on teaching strategies that promote safe and effective training of future professionals[7-8]. In this regard, qualified teaching and learning in Nursing becomes crucial, with emphasis on active learning methodologies such as high-fidelity clinical simulation[9]. This pedagogical strategy supports meaningful learning by fostering the development of technical skills, critical-reflective competencies, and clinical reasoning in a safe and dynamic environment. By representing real situations, simulation scenarios integrate scientific evidence, teamwork, and decision-making[9].

The International Nursing Association for Clinical Simulation and Learning defines simulation design as the structuring that encompasses participant assessment, facilitator engagement, simulated environment, and human and material resources, directly impacting both technical performance quality and learning effectiveness. Such planning seeks to ensure logic, standardization, and quality throughout the process as well as in learning outcomes[10].

Some studies[11-12] demonstrate that the use of clinical simulation in teaching LM insertion, through previously structured scenarios, provides greater safety and effectiveness within the learning process. Considering that the LM is easily inserted and essential for airway management in emergencies, its inclusion in undergraduate Nursing curricula is indispensable, preferably with the use of appropriate manikins.

Despite the increasing recognition of clinical simulation as an effective strategy for teaching critical skills, studies that systematically assess nursing students' technical performance in LM insertion, as well as the instructional quality of scenarios designed for this purpose, remain limited. The literature lacks evidence directly linking simulation structuring elements to learning outcomes in this specific skill,

especially within the context of Nursing education. This gap underscores the need for investigations that evaluate both pedagogical aspects and practical outcomes of simulation use in LM training, particularly from the perspective of Nursing, still scarcely explored in the literature[9-10]. In this context, questions arise regarding the effectiveness of LM teaching in academic training: What is the technical performance of nursing students in laryngeal mask insertion, and how do they assess the quality of the clinical simulation scenario employed for teaching this skill?

OBJECTIVE

To assess the technical performance of nursing students in laryngeal mask insertion, as well as the instructional design quality of the simulation scenario used for developing this skill.

METHODOLOGY

Study design

This was an observational, cross-sectional study with a quantitative and descriptive approach, focusing on the assessment of undergraduate nursing students' technical performance in laryngeal mask insertion[13] and on participants' perception regarding the instructional design quality of the simulated scenario, using the Simulation Design Scale (SDS)[14]. Study reporting followed the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement[15].

Setting, population, and eligibility criteria

The study was conducted between June and July 2024 with nursing students from a Federal University located in the state of Minas Gerais. Recruitment was voluntary and independent from course evaluation, within the context of the elective course "Advanced Nursing Practices", delivered by a faculty professor who also served as advisor of this study. To minimize potential bias related to the dual role of professor-advisor, practical assessments were carried out by independent, previously trained observers, and participation in the research did not affect course grades or evaluations. The course, directed at students from the third semester onwards, addressed topics such as sepsis, management of pressure injuries, and airway device insertion, and was held in the facilities of the academic unit, on Fridays and Saturdays. The inclusion of students from the third semester onwards was justified by the fact that, at this stage of training, students already possess basic knowledge in anatomy, physiology, and nursing fundamentals, which allows for the safe approach of simulated clinical practices involving invasive devices. Inclusion criteria were participation in both data collection days and being regularly enrolled in the undergraduate nursing program. As an exclusion criterion, incomplete completion of data collection instruments was established.

Research protocol and data collection

Data collection consisted of non-probability sampling, convenience type, and was divided into two stages, adapted from another study[12].

In Stage I, the Airway Management Knowledge Test with Laryngeal Mask was applied, composed of two sections: Section I included sociodemographic data, such as age, sex, program semester, previous experience in prehospital care, and participation in airway training. To guarantee anonymity, no names, dates of birth, or marital status were collected. Section II comprised a technical knowledge assessment with 13 statements to be classified as true or false. This test was adapted from an instrument previously developed and used in the hospital context, intended for training health professionals. Its construction considered updated guidelines for airway management and included content validation by emergency and critical care experts who assessed clarity, relevance, and comprehensiveness of the statements[12].

This stage also included a four-hour interactive lecture on advanced airway management by nurses, delivered by the first author under advisor supervision. Fundamental concepts were presented, as well as the Standard Operating Procedure (SOP) adopted by a hospital within the Ebserh Network[13].

In Stage II, clinical simulation and technical performance assessment, participants underwent a clinical simulation followed by evaluation of technical skills related to LM insertion. They received a briefing with information regarding the simulation scenario, including clinical case description, objectives, and allotted time (10 minutes per participant)[16]. The simulation was held in a controlled environment structured as a clinical skills room with basic simulation laboratory facilities, using a low-fidelity adult manikin (Laerdal®, model Resusci Anne Basic). Only the student and the evaluator were present in the room during the procedure.

Technical performance was assessed with a validated checklist[16] containing 14 items covering all steps required for LM insertion, such as material preparation, patient positioning, device lubrication, insertion technique, position confirmation, and effective ventilation. Each item was rated as correct, incorrect, or not performed. Critical errors, including improper device placement or failure to verify ventilation, were emphasized during analysis.

Evaluation was conducted by an experienced clinical simulation evaluator previously trained for checklist application to ensure standardization and minimize judgment bias. To mitigate possible influence of the advisor on participants, the advisor did not act as evaluator during the practical stage.

At the end of the simulation, individual debriefing was conducted, during which the evaluator provided feedback to the participant. Students were then taken to a reserved room to avoid influencing remaining participants and completed the SDS[14], which assesses students' perception regarding the

educational practice and the importance attributed to each item. This instrument, translated and validated for the Brazilian context, assesses students' perception of the structure of the simulated practice and the importance assigned to different instructional design components. The SDS consists of 20 items distributed across five domains or factors, evaluated with a Likert scale: objectives and information (Factor 1), support (Factor 2), problem-solving (Factor 3), feedback/reflection (Factor 4), and realism (Factor 5). This stage lasted approximately five hours.

Data collection employed electronic forms via Google Forms, anonymized by replacing personal identification with student enrollment numbers, ensuring confidentiality and privacy. Data were exported to Google Sheets and analyzed with IBM SPSS®, version 23.0.

Data analysis

Descriptive statistics were applied. For qualitative variables, absolute (n) and relative (%) frequencies were calculated. For quantitative variables, mean, standard deviation, minimum and maximum values, and percentiles were obtained. SDS analyses followed the same statistical procedures, addressing both evaluation of the educational activity and importance attributed by participants.

Ethical aspects

The study was approved by the Research Ethics Committee for Human Subjects under approval number 6.437.011. Nursing students enrolled in the course were invited to participate voluntarily, upon signing the Free and Informed Consent Form (ICF).

RESULTS

The study included 25 nursing students who met the inclusion criteria, from a total of 33 initially recruited. Eight students were excluded for not fully participating in the proposed activities. Most participants were female (n = 18; 72%) with a mean age of 22.6 years (SD ± 2.02). Regarding marital status, 88% reported being single.

In relation to prior knowledge of LM insertion, four participants (16%) reported having some previous knowledge, acquired through lectures (n = 2; 8%), scientific articles (n = 1; 4%), or other training activities such as in-person or online courses (n = 1; 4%). No significant differences in technical performance were observed between students with and without prior knowledge. Sociodemographic and educational information is presented in Table 1.

Table 1. Sociodemographic and educational characteristics of participants (n = 25). Juiz de Fora, MG, Brazil

Variables	n	%
Gender		
Female	18	72
Male	07	28
Marital status		
Single	22	88
Married	01	04
Stable union	02	08
Prior knowledge of the technique		
Yes	04	16
No	21	84
Form of knowledge acquisition		
Lectures	02	08
Scientific articles	01	04
External updates*	01	04
Not applicable	21	84

* External updates include courses, classes, and non-specified training activities.

In the assessment of technical skills during the simulated LM insertion, overall student performance was satisfactory, with high success rates in most items. All participants communicated adequately with the team, organized materials correctly, and verbally confirmed performed tasks (100%). However, specific challenges were identified in respiratory parameter evaluation and device fixation, with accuracy rates of 72% and 76%, respectively.

Full data on technical skill performance are shown in Table 2.

Table 2. Participants' performance in technical skills of laryngeal mask insertion (n = 25). Juiz de Fora, MG, Brazil

Item	Correct (n, %)	Incorrect (n, %)
1. Clear and objective communication with the team	25 (100%)	0 (0%)
2. Organization of material resources	25 (100%)	0 (0%)
3. Verbal confirmation of task execution	25 (100%)	0 (0%)
4. Assessment of respiratory parameters and peripheral perfusion	18 (72%)	7 (28%)
5. Recognition of the need for LM	19 (76%)	6 (24%)
6. Appropriate device selection	22 (88%)	3 (12%)
7. Cuff inspection (inflate/deflate)	24 (96%)	1 (4%)
8. Appropriate protective equipment	23 (92%)	2 (8%)
9. LM preparation	25 (100%)	0 (0%)
10. Correct opening of the oral cavity	22 (88%)	3 (12%)
11. LM insertion	23 (92%)	2 (8%)
12. LM position confirmation	22 (88%)	3 (12%)
13. Chest assessment and auscultation	22 (88%)	3 (12%)
14. Device fixation	19 (76%)	6 (24%)

Regarding SDS-based evaluation of instructional design, Factor 3 (feedback and reflection) obtained the highest mean (5.79; SD ± 0.58), indicating highly positive student perceptions of this domain. In contrast, Factor 5 (realism) presented the lowest mean (3.90; SD ± 0.95), suggesting perceived limitations in this dimension, as shown in Table 3.

Table 3. Evaluation of factors and importance attributed within the Simulation Design Scale (n = 25). Juiz de Fora, MG, Brazil

Measures	Factor 1 AF*	Factor 2 AF	Factor 3 AF	Factor 4 AF	Factor 5 AF	Factor 1 IA**	Factor 2 IA	Factor 3 IA	Factor 4 IA	Factor 5 IA
Mean	4.66	4.54	5.79	4.76	3.9	4.68	4.42	4.54	4.7	4.2
Standard Deviation	0.4	0.54	0.58	0.38	0.95	0.39	0.67	0.51	0.44	0.84
Minimum	3.8	3.25	4.25	3.75	2	3.8	3.25	3.4	3.5	3
Maximum	5	5	6.25	5	5	5	5	5	5	5
Percentile 25	4.3	4	5.25	4.5	3	4.3	3.87	4.1	4.62	3.25
Percentile 50	4.8	4.75	6.25	5	4	4.8	4.75	4.6	5	4.5
Percentile 75	5	5	6.25	5	4.75	5	5	5	5	5

*AF – Factor assessment

** IA – Importance attributed

Statistical analysis showed no significant differences among mean scores of the SDS factors ($p > 0.05$).

Considering the importance attributed by students, Factor 4 (feedback/reflection) achieved the highest mean (4.70; SD ± 0.44), reflecting high value assigned to pedagogical alignment. Conversely, Factor 5 maintained the lowest mean (4.20; SD ± 0.84), suggesting room for improvement in this domain, as presented in Table 3.

Therefore, although students demonstrated good overall performance, aspects such as respiratory assessment and device fixation proved more challenging. From the perspective of instructional design, results highlight the strong relevance attributed to feedback and learning objective integration, whereas adjustments in activity complexity may enhance the formative experience.

DISCUSSION

The sample primarily consisted of young single women, with a mean age of 22.6 years, and with little or no prior knowledge regarding LM insertion. These findings reflect the predominant profile of nursing students in Brazil and corroborate previous results that identified a reduced level of prior familiarity with the device among nurses before an educational intervention[17].

In this study, the evaluation of students' technical performance during simulation revealed accuracy above 70% in most checklist items. The combination of theoretical content and simulated practice contributed to the development of the technical competencies required to perform the procedure[18]. These findings are consistent with another study that demonstrated a significant increase in knowledge and clinical skills among nursing students following theoretical-practical teaching strategies on airway management, regardless of the method adopted (interactive lecture with laboratory or exclusively clinical simulation)[19].

The use of a checklist as a formative assessment tool proved effective in analyzing compliance with the essential steps of LM insertion, enabling evaluators to provide immediate feedback to participants. Lower performance in steps such as assessment of respiratory parameters and device fixation highlights critical points of the technique that require reinforcement in teaching and supervised practice[16]. These challenges may be related to technical complexity, students' limited prior familiarity with the procedure, and difficulty recognizing clinical signs in low-fidelity manikins. This reinforces the importance of pedagogical strategies specifically directed at more demanding steps, such as supervised demonstration, structured feedback, and deliberate repetition[16].

Clinical simulation, as an active teaching methodology, fosters meaningful and safe learning of invasive procedures, including airway device insertion. The possibility of repeated practice, the absence of risks for patients, and the progressive development of student autonomy make this strategy particularly valuable[5]. In the context of this study, simulation allowed participants to complete all steps of the procedure in a structured, controlled environment, which supported the overall performance observed. Nonetheless, mastery of the technique requires ongoing training and supervision, in addition to standardized protocols adapted to the reality of each healthcare institution[20].

The use of a low-fidelity manikin, identified as a limitation, may also explain the lower scores obtained for Factor 5 in the SDS, likely affecting students' perception of realism. In relation to students' perception of the instructional design of the simulation scenario, the SDS results[17] revealed an overall highly positive evaluation. Factor 3, associated with problem-solving, achieved the highest mean, reflecting simulation effectiveness in promoting clinical reasoning and decision-making. Conversely, Factor 5 obtained the lowest scores in both evaluation and attributed importance. This domain, related to realism, may have been influenced by the use of low-fidelity manikins, which, although useful for practicing technical steps, present limitations regarding clinical sign reproduction, physiological responses, and facial expressions. Such limitations may compromise immersion and hinder students' perception of verisimilitude, particularly concerning emotional context and the complexity of real-time decisions.

Moreover, this finding is consistent with other studies reporting Factor 5 as a dimension

frequently underassessed in simulations implemented with limited resources, a recurrent outcome when medium- or high-fidelity manikins are not employed or when constraints exist in the physical environment and scenario design[21-22]. Therefore, although simulation was well assessed in the other SDS domains, lower Factor 5 scores indicate the need to consider material resources and environmental improvements in future projects to enhance participants' perception of realism.

Comprehensive assessment of the five SDS domains indicates that participants considered the scenario well structured, with clearly defined objectives, effective instructional support, and satisfactory realism for the activity's purpose, despite space for improvement in physical and contextual fidelity.

Study limitations

Among this study's limitations, its cross-sectional design stands out as it precluded comparative assessment of students' performance before and after the intervention. This methodological characteristic restricted evaluation of teaching strategy effectiveness regarding individual progression of knowledge and technical skills. Moreover, the small number of participants compromised sample representativeness, limiting generalization of findings to other educational contexts or higher education institutions. Convenience sampling, restricted to students enrolled in an elective course, may have introduced selection bias, as participants had potentially greater affinity or prior interest in the subject.

Another limitation to be considered concerns the use of low-fidelity manikins, which may have reduced clinical simulation realism. This limitation possibly affected participant immersion in the proposed scenario, thereby influencing, to some extent, the quality of learning experienced during the activity.

Contributions to Nursing, Health, or Public Policy

This study's findings offer relevant contributions to Nursing, particularly in professional training and health education. By demonstrating that theoretical-practical teaching strategies associated with clinical simulation favor development of technical skills such as LM insertion, the study reinforces the importance of incorporating active methodologies into undergraduate nursing curricula. Such an approach fosters clinical reasoning, safe decision-making, and autonomy of future professionals in urgent and emergency situations. In addition, results demonstrate simulation's potential as an effective pedagogical tool, supporting its adoption in training and continuing education programs for nurses already working in healthcare systems.

From a healthcare and public policy perspective, the results align with the National Policy on Continuing Education in Health by indicating that active pedagogical practices, such as clinical simulation, can be incorporated into training programs within the Unified Health System. Such incorporation strengthens the technical competency of nursing professionals and enhances workforce

qualification, promoting positive impacts on patient safety, problem-solving capacity in medium- and high-complexity care, and risk reduction in critical care contexts. In this sense, the study points to feasible and effective pathways for professional practice improvement, consistent with national guidelines for permanent training and continuous improvement of healthcare delivery.

CONCLUSION

The results of this study allow us to conclude that nursing students demonstrated satisfactory technical performance in LM insertion, with high accuracy rates in steps assessed through the practical checklist. In addition, evaluation of the instructional design of the simulation scenario, conducted with the SDS, indicated participants' positive perception regarding clarity of objectives, support received, realism of the environment, and stimulation of reflection and problem-solving. Thus, the developed scenario proved effective both for practical teaching of the technique and for fostering a meaningful learning environment, although limitations such as convenience sampling and the absence of prior assessment of students' practical performance should be considered when interpreting the findings.

The results suggest that clinical simulation may serve as a valuable strategy for training emergency and urgent care skills, with potential for application in both academic contexts and continuing professional training programs within healthcare services. Nevertheless, the importance of conducting longitudinal studies is emphasized to assess skill retention over time, thereby verifying the sustainability of simulation-based interventions in future clinical practice.

REFERENCES

1. Fritz C, Monos S, Ng J, Romeo D, Xu K, Moreira A, Rajasekaran K. Management of the Difficult Airway: An Appraisal of Clinical Practice Guidelines. Otolaryngol Head Neck Surg. 2024 [citado 17 jun 2025];170(1):112-21. Disponível em: https://doi.org/doi:10.1002/ohn.466
2. Pérez-Civantos D, Muñoz-Cantero A, Fuentes MF, Nieto SP, Ángeles STM, Durán CN. Management of New Special Devices for Intubation in Difficult Airway Situations [Internet]. Special Considerations in Human Airway Management. IntechOpen; 2021[citado 17 jun 2025]. Disponível em: http://dx.doi.org/10.5772/intechopen.97400
3. Feitosa KA, Feitosa FP, Gonçalves JR, Brito WSF. Suporte avançado de vida: a inserção e manuseio da máscara laríngea por profissionais de enfermagem frente a uma emergência clínica. Cad. Pedagógico [Internet]. 2024 [citado 17 jun de 2025];21(7):e5571. Disponível em: https://doi.org/10.54033/cadpedv21n7-087
4. Katzenschlager S, Mohr S, Kaltschmidt N, Peterstorfer F, Weilbacher F, Günther P, et al. Laryngeal mask vs. laryngeal tube trial in paediatric patients (LaMaTuPe): a single-blinded,

open-label, randomised-controlled trial. Eur J Emerg Med. 2025 [citado 17 jun de 2025];32(2):123-130. Disponível em: https://doi.org/10.1097/MEJ.0000000000001178

5. Conselho Federal de Enfermagem (BR). Resolução COFEN nº 641/2020, de 04 de junho de 2020. Dispõe sobre a 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 [Internet]. Brasília: COFEN; 2020 [citado 17 jun de 2025]. Disponível em: https://www.cofen.gov.br/resolucao-cofen-no-641-2020/
6. Panchal AR, Bartos JA, Cabañas JG, Donnino MW, Drennan IR, Hirsch KG, et al. Part 3: Adult Basic and Advanced Life Support: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2020;142(16_suppl_2):S366-S468. Disponível em: https://doi.org/10.1161/CIR.0000000000000916.
7. Soar J, Böttiger BW, Carli P, Couper K, Deakin CD, Djärv T, et al. European Resuscitation Council Guidelines 2021: Adult advanced life support. Resuscitation. 2021 Apr;161:115-151. doi: 10.1016/j.resuscitation.2021.02.010. Epub 2021. Erratum in: Resuscitation. 2021 Oct;167:105-106. Disponível em: https://doi.org/10.1016/j.resuscitation.2021.
8. Pereira HM, Nascimento DC do, Bertussi VC, Oliveira A da S. Os benefícios do uso da máscara laríngea pelo enfermeiro em situações de emergência. CLCS [Internet]. 2025 [citado 17 jun de 2025];18(1):e14260. Disponível em: https://doi.org/10.55905/revconv.18n.1-010
9. Silva GCN, Bernardinelli FCP, Silveira RCCP, Pedersoli CE, Amorim GC, Chavaglia SRR. Inserção da máscara laríngea por enfermeiros: revisão integrativa da literatura. Rev Eletr Enferm [Internet]. 2022 [citado 17 jun de 2025];24:68350. Disponível em: https://doi.org/10.5216/ree.v24.68350
10. INACSL Standards Committee, Watts PI, McDermott DS, Alinier G, Charnetski M, Nawathe PA. Healthcare Simulation Standards of Best Practice™ Simulation Design. Clin Simul Nurs [Internet]. 2021 [citado 17 jun de 2025];58:14–21. Disponível em: https://doi.org/10.1016/j.ecns.2021.08.013
11. Pereira MGN, Rocco KMW, Oliveira TMN, Rocha IAS, Ravagnani PAL, Oliveira MPS, et al. Applicability of clinical simulation scenario in the teaching of laryngeal mask insertion. RSD [Internet]. 2022Aug.16 [citado 19 jun de 2025];11(11):e97111132819. Disponível em: https://doi.org/10.33448/rsd-v11i11.32819
12. Pereira MGN, Roco KMW, Almeida CL, Ravagnani PAL, Moreira ACMG, Haddad MCFL, et al. Simulação clínica como estratégia de educação permanente para enfermeiros na inserção da

máscara laringea. REAS [Internet]. 2024 [citado 19 jun de 2025];24(9):e16705. Disponível em: https://doi.org/10.25248/reas.e16705.2024

13. Rede Ebserh. Procedimento/Rotina: inserção de máscara laríngea. Versão 01. Juiz de Fora: Ebserh; 2023 [citado 2025 jun. 19]. Disponível em: https://www.gov.br/ebserh/pt-br/hospitais-universitarios/regiao-sudeste/hu-ufjf/acesso-a-informacao/nucleo-de-qualidade-hospitalar-gestao-de-documentos/gerencia-de-atencao-a-saude/unidade-de-clinicas-cirurgicas-especializadas-ucir/pop-ucg-013-insercao-de-mascara-laringea.pdf/view
14. Almeida RG dos S, Mazzo A, Martins JCA, Pedersoli CE, Fumincelli L, Mendes IAC. Validation for the portuguese language of the Simulation Design Scale. Texto contexto - enferm [Internet]. 2015 [citado 19 jun de 2025];24(4):934–40. Disponível em: https://doi.org/10.1590/0104-070720150000457001 4
15. Malta M, Cardoso LO, Bastos FI, Magnanini MMF, Silva CMFP da. STROBE initiative: guidelines on reporting observational studies. Rev Saúde Pública. 2010[citado 19 jun de 2025];44(3):559-65. Disponível em: https://doi.org/10.1590/S0034-89102010000300021
16. Universidade Federal de Santa Catarina. Departamento de Enfermagem. Guia metodológico para simulação em enfermagem – CEPETEC [Internet]. Florianópolis: UFSC; 2015 [citado 19 jun de 2025]. Disponível em: https://nfr.paginas.ufsc.br/files/2015/11/GUIA-METODOL%C3%93GICO-PARA-SIMULA%C3%87%C3%83O-EM-ENFERMAGEM-CEPETEC.pdf
17. Sé ACS, Reis AL, Pestana LC, Gonçalves RCS, Paiva APDL, Nagatsuka CB, et al. Conhecimento de enfermeiros residentes sobre o manejo de via aérea com inserção de máscara laríngea. Glob Acad Nurs [Internet]. 2021 [citado 19 jun de 2025]; 1–6. Disponível em: https://dx.doi.org/10.5935/2675-5602.20200109
18. Zaichkin J, McCarney LD, Rhein M. The Laryngeal Mask: Empowering Nurses to Rescue Newborns. Adv Neonatal Care. 2023 [citado 19 jun de 2025]; 23(2):140-150. Disponível em: https://dx.doi.org/10.1097/ANC.0000000000001044
19. Pedersoli CE, Pedersoli TAM, Faro ACM, Dalri MCB. Ensino do manejo da via aérea com máscara laríngea: estudo randomizado controlado. Rev Bras Enferm [Internet]. 2016 [citado 19 jun de 2025]; 69(2):368–74. Disponível em: https://doi.org/10.1590/0034-7167.2016690221i
20. Tang YN, Lui CT, Fung HT, Lee LY, Lau CL. Laryngeal mask airway in out-of-hospital cardiac arrest. Singapore Med J. 2024 [citado 19 jun de 2025];65(12):703-707. Disponível em: https://doi.org/10.11622/smedj.2021197
21. Lervik W, Solberg M, Wiig AC, Reime MH, Husebø SE. Turning nursing students' mistakes into resources for learning in simulation-based training: facilitators' assumptions about providing

feedback in debriefing. BMC Med Educ [Internet]. 2025 [citado 19 jun de 2025];25:76. Disponível em: https://doi.org/10.1186/s12909-024-06628-z

22. Blaak H, Lkoul A, Iziki H, El Haddaouy A, Kharabch A, Razine R, et al. Satisfaction and self-confidence of Moroccan nursing students in simulation-based learning and their associations with simulation design characteristics and educational practices. Nurs Rep [Internet]. 2025 [citado 19 jun de 2025];15(5):138. Disponível em: https://doi.org/10.3390/nursrep15050138

Acknowledgments: Universidade Federal de Juiz de Fora.

Funding: None.

Authors' contributions: Research concept and design: Leandra de Brito Barbosa Santos Campos, Daniele Knopp Ribeiro, Fábio da Costa Carbogim. Data collection: Leandra de Brito Barbosa Santos Campos, Daniele Knopp Ribeiro, Fábio da Costa Carbogim. Data analysis and interpretation: Leandra de Brito Barbosa Santos Campos, Daniele Knopp Ribeiro, Fábio da Costa Carbogim. Manuscript writing: Leandra de Brito Barbosa Santos Campos, Daniele Knopp Ribeiro, Fábio da Costa Carbogim, Carolina Alves Matos de Menezes. Critical review of the manuscript for the intellectual content: Leandra de Brito Barbosa Santos Campos, Daniele Knopp Ribeiro, Fábio da Costa Carbogim, Carolina Alves Matos de Menezes.