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The safety of aesthetic procedures performed by nurses: an integrative review

A segurança dos procedimentos estéticos realizados por enfermeiros: revisão integrativa

La seguridad de los procedimientos estéticos realizados por enfermeros: revisión integradora

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Abstract:

The growing demand for aesthetic procedures has contributed to the expansion of nursing professionals' roles in this field, highlighting the need to investigate aspects related to patient safety and the prevention of complications. This study aimed to analyze scientific evidence regarding the safety and mortality associated with aesthetic procedures performed by nurses, considering publications from 2019 to 2024. An integrative literature review was conducted using a qualitative and descriptive approach, based on the analysis of scientific publications related to aesthetic nursing, biosafety, adverse events, and safe patient care. The research included searches in the SciELO, LILACS, and PubMed/MEDLINE databases, considering studies addressing professional practice and the risks associated with aesthetic procedures. The literature analysis identified potential complications associated with these interventions, including edema, hematomas, infections, inflammatory reactions, tissue necrosis, and vascular complications, which varied in severity. Relevant factors for preventing adverse events were also identified, including professional qualifications, anatomical knowledge, individualized clinical assessment, compliance with biosafety standards, and the implementation of clinical care protocols. Regarding mortality, the available verified information was insufficient to establish specific mortality rates associated with aesthetic procedures performed by nurses, highlighting limitations in the availability of scientific data focused on this professional category. It was concluded that safety in aesthetic nursing depended on specialized training, ethical responsibility, care planning, and the adoption of evidence-based practices. Furthermore, the need for additional research on severe complications and mortality was emphasized to improve the quality of care and protect the health of patients undergoing aesthetic procedures.

Keywords: Aesthetic Nursing. Patient Safety. Aesthetic Procedures. Adverse Events. Mortality.

Resumo:

A crescente procura por procedimentos estéticos contribuiu para a ampliação da atuação dos profissionais de enfermagem nesse segmento, evidenciando a necessidade de investigar os aspectos relacionados à segurança do paciente e à prevenção de complicações. O presente estudo teve como objetivo analisar as evidências científicas sobre a segurança e a mortalidade dos procedimentos estéticos realizados por enfermeiros, considerando publicações do período de 2019 a 2024. Tratou-se de uma revisão integrativa da literatura, de abordagem qualitativa e caráter descritivo, fundamentada na análise de publicações científicas relacionadas à enfermagem estética, à biossegurança, aos eventos adversos e à assistência segura. A pesquisa contemplou buscas nas bases de dados SciELO, LILACS e PubMed/MEDLINE, considerando estudos relacionados à atuação profissional e aos riscos envolvidos nos procedimentos estéticos. A análise da literatura permitiu identificar complicações potencialmente associadas às intervenções, como edema, hematomas, infecções, reações inflamatórias, necrose tecidual e alterações vasculares, que apresentaram diferentes níveis de gravidade. Também foram identificados fatores relevantes para a prevenção de eventos adversos, incluindo qualificação profissional, conhecimento anatômico, avaliação clínica individualizada, cumprimento das normas de biossegurança e utilização de protocolos assistenciais. Em relação à mortalidade, as informações verificadas não foram suficientes para estabelecer taxas específicas de óbitos associados aos procedimentos realizados por enfermeiros, evidenciando limitações na disponibilidade de

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dados científicos direcionados a essa categoria profissional. Concluiu-se que a segurança na enfermagem estética dependeu da formação especializada, da responsabilidade ética, do planejamento assistencial e da adoção de práticas fundamentadas em evidências científicas. Destacou-se, ainda, a necessidade de ampliar as pesquisas sobre complicações graves e mortalidade, contribuindo para o aprimoramento da assistência e para a proteção da saúde dos pacientes.

Palavras-chave: Enfermagem estética. Segurança do paciente. Procedimentos estéticos. Eventos adversos. Mortalidade.

Resumen:

La creciente demanda de procedimientos estéticos contribuyó a ampliar la actuación de los profesionales de enfermería en este segmento, evidenciando la necesidad de investigar aspectos relacionados con la seguridad del paciente y la prevención de complicaciones. Este estudio tuvo como objetivo analizar las evidencias científicas sobre la seguridad y la mortalidad de los procedimientos estéticos realizados por enfermeros, considerando publicaciones del período de 2019 a 2024. Se realizó una revisión integradora de la literatura, de enfoque cualitativo y carácter descriptivo, fundamentada en el análisis de publicaciones relacionadas con enfermería estética, bioseguridad, eventos adversos y asistencia segura. La investigación incluyó búsquedas en SciELO, LILACS y PubMed/MEDLINE, considerando estudios sobre actuación profesional y riesgos de los procedimientos estéticos. El análisis permitió identificar complicaciones potenciales como edema, hematomas, infecciones, reacciones inflamatorias, necrosis tisular y alteraciones vasculares de distintos grados de gravedad. También se identificaron factores relevantes para prevenir eventos adversos: cualificación profesional, conocimientos anatómicos, valoración clínica individualizada, cumplimiento de normas de bioseguridad y uso de protocolos asistenciales. Respecto a mortalidad, la información verificada no fue suficiente para establecer tasas específicas de muertes asociadas a procedimientos realizados por enfermeros, evidenciando limitaciones en los datos científicos dirigidos a esta categoría. Se concluyó que la seguridad dependió de formación especializada, responsabilidad ética, planificación asistencial y prácticas fundamentadas en evidencias. Se destacó ampliar las investigaciones sobre complicaciones graves y mortalidad para perfeccionar la asistencia y proteger la salud de los pacientes.

Palabras clave: Enfermería estética. Seguridad del paciente. Procedimientos estéticos. Eventos adversos. Mortalidad.

1 Introduction

The growing value placed on physical appearance and demand for rejuvenation, facial harmonization and improved self-esteem have contributed to expansion of the aesthetic market in different countries. This growth broadened the involvement of healthcare professionals, including physicians, dentists, pharmacists and nurses. Aesthetic procedures thus became an area of interest for nursing, particularly because they offer opportunities to combine technical and scientific knowledge, individualized care and patient safety practices (MURRAY et al., 2021; DOYON et al., 2024).

Aesthetic nursing has advanced significantly in recent years, alongside developments in treatment techniques and resources. Procedures performed by nurses, according to professional qualifications and applicable regulations, included botulinum

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toxin injections, hyaluronic acid dermal fillers, microneedling, chemical peels and collagen biostimulation treatments. These interventions aimed to improve physical appearance, minimize age-related changes and contribute to patient satisfaction and well-being (FERREIRA; DIAZ, 2024).

Despite their benefits, scientific literature showed that aesthetic interventions were not risk-free, even when classified as minimally invasive. Complications were related to technique, patient clinical conditions, practitioner anatomical knowledge, product quality and compliance with biosafety protocols. Reported adverse events included bruising, edema, infections, inflammatory reactions, tissue necrosis and vascular occlusion, potentially compromising treatment results and patients' physical integrity (MURRAY et al., 2021; BOTHA; INSULL, 2024).

Complications from injectable substances received particular attention because of potentially serious adverse events. Procedures involving dermal fillers and botulinum toxin carried risks ranging from mild transient manifestations to more severe complications. In some circumstances, particularly vascular compromise, adverse events could cause substantial tissue damage and permanent sequelae. These findings emphasized prior assessment, mastery of techniques and the ability to identify and manage complications early (MURRAY et al., 2021).

Patient safety was therefore fundamental to assessing the quality of aesthetic procedures performed by nursing professionals. Preventive measures, detailed medical histories, identification of contraindications, biosafety compliance and clinical care protocols were identified as relevant to risk reduction. Professional training and continuing scientific education were also considered essential to safe, ethical and evidence-based practices (FERREIRA; DIAZ, 2024).

Discussion of aesthetic-procedure-related mortality was also relevant, although available studies more frequently addressed clinical complications and nonfatal adverse events. Potentially serious consequences reinforced the importance of investigating risk factors and safety conditions. However, mortality analysis required attention to limitations of available records, especially identification of the professional category performing procedures and the relationship between observed complications and reported outcomes.

The investigation was guided by the following question: What was the mortality and safety profile of aesthetic procedures performed by nurses according to scientific literature published between 2019 and 2024? This question considered nursing's growing participation in aesthetics and the need to understand procedural risks and factors contributing to complication prevention and protection of patient health.

The general objective was to analyze scientific evidence concerning mortality and safety of aesthetic procedures performed by nurses. Specifically, the study sought to identify their main aesthetic procedures, describe adverse events and complications reported

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in the literature, evaluate patient safety factors and analyze serious events associated with aesthetic practice.

An integrative literature review covering scientific publications from 2019 to 2024 was conducted. This method brought together and analyzed knowledge from different perspectives on aesthetic procedures, complications and risk prevention. The investigation thereby sought to improve understanding of safety conditions in aesthetic nursing and strengthen care grounded in scientific, ethical and care principles.

2 Literature review

2.1 Nurses' involvement in aesthetic procedures and professional regulation

Aesthetic nursing expanded in recent years, driven by increasing demand for improved appearance, prevention of aging signs and promotion of self-esteem. This broadened nursing opportunities in clinical assessment, aesthetic treatment planning and procedures compatible with technical and legal competencies. Nurses' involvement also expanded discussions of professional qualifications, ethical responsibility and service safety.

Aesthetic nursing drew on knowledge acquired during academic training, especially anatomy, physiology, pharmacology, microbiology and healthcare. This knowledge underpinned individual assessment, identification of contraindications and prevention of complications. However, general nursing training alone was not considered sufficient for more complex procedures, requiring specific competencies and compliance with requirements established by professional regulatory bodies.

In Brazil, aesthetic nursing regulation was marked by Federal Nursing Council (COFEN) Resolution No. 529/2016, subsequently amended by Resolutions No. 626/2020 and No. 715/2023. These established criteria covering care competencies, qualifications and procedural limits. Resolution No. 626/2020 regulated activities such as carboxytherapy, lymphatic drainage, micropigmentation, dermopigmentation, electrotherapy, cavitation ultrasound and vacuum therapy, alongside other activities compatible with professional legislation. Regulation thus sought to establish specialty practice parameters and contribute to patient safety (COFEN, 2020).

COFEN Resolution No. 715/2023 subsequently amended training requirements, establishing a lato sensu postgraduate qualification in the field, under educational legislation, with at least 100 hours of supervised practical classes. This reinforced technical skill development and integration of theoretical knowledge and practical experience. Specialized training was fundamental to recognizing professional limitations, applying techniques appropriately and identifying complications early during care (COFEN, 2023).

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Beyond specialized training, professional practice required attention to ethical principles and care responsibilities. Aesthetic nurses needed to consider each patient's individual needs, clinical condition, expectations and possible contraindications. Nursing consultations, history-taking, medical record documentation and post-procedure guidance were fundamental to care organization. COFEN regulations also assigned nurses responsibilities for assessment, planning and follow-up of patients undergoing aesthetic treatments (COFEN, 2020).

Aesthetic care also involved an individualized approach, understanding procedures as interventions requiring scientific knowledge and professional responsibility. Prior assessment identified conditions increasing complication risk, including skin changes, active infections, previous adverse reactions and certain health conditions. Planning therefore needed to consider intended aesthetic outcomes and procedural risks.

Another important aspect was the diversity of procedures used in aesthetic medicine and other professional fields. Botulinum toxin, hyaluronic acid fillers and other minimally invasive interventions had different complexity levels and specific risks. Their availability in the aesthetic market did not automatically authorize nurses to perform them. Each procedure depended on applicable regulations, practitioner qualifications and legal restrictions, requiring a distinction between techniques studied in the literature and those actually authorized for nursing.

Expansion also brought challenges in standardizing practice, inspecting services and developing care protocols. Clinics and specialized establishments required appropriate operating conditions, suitable materials, approved products and organized care processes. These measures aimed to reduce risks and ensure technical and sanitary standards compatible with health protection.

Professional regulation was important in defining nursing competencies and guiding safe care. Specialized training, respect for legal limits, scientific updating and safety protocols were fundamental to responsible aesthetic practice. Consolidation of the specialty thus involved both expanded professional opportunities and commitment to care quality, complication prevention and patient safety.

2.2 Patient safety and main complications associated with aesthetic procedures

Patient safety was a principal component of aesthetic care quality, especially for interventions using injectables, equipment and techniques capable of altering tissues. Although many treatments were minimally invasive, this classification did not eliminate adverse events. Identifying intervention risks was therefore essential to complication prevention and scientifically grounded care.

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Procedure complexity varied according to technique, anatomical region and individual clinical conditions. Potential events included edema, ecchymosis, hematomas, local pain, redness, inflammation and hypersensitivity reactions. These could result from tissue manipulation and sometimes had a transient course. Proper identification was necessary to distinguish expected reactions from complications requiring follow-up or professional intervention.

Hyaluronic acid dermal fillers received particular attention because of improper application risks and possible vascular changes. Murray et al. (2021) described vascular occlusion as potentially serious, compromising circulation and causing tissue ischemia. Early recognition and appropriate management were fundamental to limiting damage. Injectable safety therefore depended on anatomical knowledge, correct tissue assessment and ability to recognize emergencies.

Filler-related vascular complications could cause major skin discoloration, severe pain, reduced perfusion and tissue necrosis. In specific situations, vascular compromise could also produce serious ophthalmological and neurological consequences. Although uncommon, these events emphasized careful indication and technique selection. Signs of circulatory compromise required immediate attention, since delays could worsen injuries and tissue recovery.

Murray et al. (2021) also emphasized professional preparedness to recognize and treat hyaluronic acid filler complications. Their guidance on identifying occlusion and organizing management showed the importance of care protocols for safety. Application nevertheless needed to respect professional competencies and the clinical circumstances of each event.

Botulinum toxin procedures also required attention to adverse effects, including facial asymmetry, eyelid ptosis, muscular functional changes and local reactions. These could relate to injection site, dose, substance diffusion and patient characteristics. Understanding product mechanisms and respecting technical indications were relevant to preventing undesirable outcomes.

Procedures disrupting the skin barrier, such as microneedling and certain chemical peels, also carried specific risks. Irritation, burns, postinflammatory hyperpigmentation and infection emphasized prior skin assessment and appropriate use of resources. Individual characteristics, including sensitivity, healing history and dermatological disease, helped identify threats to treatment safety.

Infection prevention was another essential safety component. Contact with skin, mucosa and sharps could expose patients and professionals to microorganisms. Hand hygiene, appropriate personal protective equipment, skin antisepsis, correct reprocessing of reusable materials and proper waste disposal were important to reducing biological risk. Organization of the care environment also reduced cross-contamination opportunities.

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Safety also depended on pre-intervention clinical assessment. Information on allergies, current medication, preexisting disease, previous procedures and complications identified factors affecting outcomes. This supported individualized decisions and recognition of contraindications. Clear aftercare guidance likewise helped reduce complications and identify changes early.

Professional-patient communication was also important. Explaining risks, benefits, limitations and possible outcomes was part of safe care. Informed consent required understanding procedural characteristics and complications that might occur even with appropriate technique. Documentation supported continuity and recorded care decisions.

Scientific literature showed that minimally invasive techniques alone could not guarantee freedom from complications. Risk assessment needed to consider patient conditions, materials, complexity, practitioner experience and resources for managing adverse events. Safety was thus understood as the result of preventive and care measures collectively, rather than technical execution alone.

Aesthetic nurses therefore needed continuing attention to safety, particularly events threatening physical integrity. Evidence-based practice, sanitary compliance, professional qualifications and appropriate follow-up were relevant to risk reduction. Patient safety remained central to organizing and evaluating aesthetic care quality.

2.3 Risk factors, adverse-event prevention and mortality in aesthetic nursing

Identifying aesthetic-procedure risk factors was fundamental to understanding conditions that could compromise safety. Although minimally invasive interventions offered shorter recovery and outpatient delivery, they involved risks requiring specific knowledge and prevention. Analysis of complication-related factors highlighted professional qualification, clinical assessment and protocols to reduce adverse events.

Risk factors included inappropriate technique, insufficient anatomical knowledge, incorrect product selection, no prior assessment and biosafety failures. These could cause local and systemic complications, compromising expected outcomes and physical integrity. The anatomical complexity of some regions, particularly the face, mattered because of nearby vascular and neural structures vulnerable to injectables.

Murray et al. (2021) emphasized vascular anatomy knowledge and recognition of circulatory changes for prevention and management of hyaluronic acid filler complications. Vascular occlusion could cause ischemia and major damage if not promptly identified and treated. Training to recognize clinical signs was therefore relevant to limiting event severity.

Yi et al. (2024) investigated vascular risks through an experimental anatomical study of ophthalmic circulation obstruction after introducing small filler amounts into

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certain vessels. Small volumes could produce arterial obstruction under experimental conditions. These findings reinforced anatomical knowledge and caution near vascular structures connected to ocular circulation.

Ophthalmological complications were among the most serious consequences of facial fillers. Botha and Insull (2024) examined mechanisms of visual loss and highlighted filler embolization into the ophthalmic arterial circulation. Visual loss was rare but potentially devastating, often with poor prognosis. Immediate recognition of ocular compromise and specialist referral were fundamental to reducing consequences.

Doyon et al. (2024) further demonstrated severity, identifying 365 new published cases of partial or complete visual loss following aesthetic fillers from September 2018 to March 2023. Among cases with outcome information, 68.2% had no visual recovery, 25.8% partial improvement and 6% complete recovery. Findings emphasized clinical relevance and preventive measures, particularly in higher-risk regions. They did not establish complication frequency specifically for procedures performed by nurses.

Besides vascular risks, individual clinical conditions were important in safety assessment. Preexisting disease, coagulation changes, allergies, infections and some medications could affect procedural indication and subsequent course. Detailed history-taking and identification of health conditions were therefore fundamental preventive measures for treatment planning and risk reduction.

Biosafety was central to adverse-event prevention. Procedures puncturing skin or manipulating tissue required antisepsis, hand hygiene, appropriate materials and sanitary care environments. Failures could increase infectious exposure and complications such as local infection and inflammation. Infection prevention and control were indispensable professional responsibilities.

In aesthetic nursing, prevention was directly linked to care planning and specialized training. COFEN regulation reinforced technical and scientific preparation for authorized procedures, specific skill acquisition and knowledge updating. Resolution No. 715/2023 established minimum qualification criteria through specialized training and supervised practical hours (COFEN, 2023).

Developing and using clinical protocols also organized care and prevented complications. They standardized initial assessment, environment preparation, procedures, follow-up and recognition of warning signs. Predefined practices supported organized care and responses to unexpected situations. Protocols did not replace clinical judgment, scientific knowledge or individualized assessment.

Appropriate products and checks of storage, preservation and expiry were also relevant. Material provenance mattered because unapproved, contaminated or improperly used products could increase adverse reactions and tissue damage. Material control and sanitary compliance contributed to reduced risk.

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Communication was an important preventive measure. Information on adverse effects, procedural limits and warning signs supported patients' participation in their own health. Aftercare guidance clarified recommended recovery behaviors and situations requiring assessment. Medical record documentation supported continuity and recording of complications.

Mortality analysis required distinguishing serious complications, permanent sequelae and fatal outcomes. Although literature documented severe events, deaths could not be presumed from vascular, infectious or neurological complications. Attributing mortality to a procedure required reliable clinical records, event circumstances and a causal relationship between intervention and outcome.

Mortality investigation had specific limitations for nurse-performed procedures. Some research addressed general technique-related risks without sufficient information on practitioner profession. This hindered identification of deaths specifically attributable to aesthetic nursing and calculation of mortality rates.

Minimally invasive procedures also needed to be distinguished from major aesthetic surgery. Both involved care risks but differed substantially in techniques, infrastructure and potential complications. Surgical mortality data could not automatically represent risks of minimally invasive aesthetic nursing clinic procedures.

Lack of specific mortality data did not mean absence of serious risk. Inadequate documentation and reporting-system limitations could obscure actual complication frequency. Better care records and proper adverse-event reporting were important to producing evidence and assessing safety.

Risk-factor and prevention analysis showed safety depended on several aspects of care organization. Professional qualification, anatomical knowledge, sanitary compliance, appropriate materials and protocols were fundamental to reducing complications. Follow-up and early identification of adverse signs also supported appropriate care responses.

The examined literature thus highlighted prevention in reducing aesthetic-procedure risks, especially serious complications. General safety evidence alone was insufficient to establish specific mortality or complication rates among patients treated by nurses. Research focused on aesthetic nursing, standardized records and systematic outcome monitoring remained important for patient safety and evidence-based professional practice.

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3 Materials and methods

This study used an integrative literature review to gather, analyze and critically synthesize previously published scientific evidence on the safety of aesthetic procedures performed by nurses. The approach identified knowledge from research with different methodological designs, providing a comprehensive understanding of risks, complications and safety measures in aesthetic nursing practice.

The method was justified by the need to integrate scientific findings, identify knowledge gaps and analyze patient safety, particularly as nursing professionals' participation in aesthetics expanded.

The investigation followed systematic stages: topic definition, guiding-question formulation, selection criteria, database searching, reading and assessment of selected publications, information organization and synthesis of findings.

The guiding question addressed the mortality and safety profile of nurse-performed aesthetic procedures in literature published from 2019 to 2024. This period focused analysis on advances in aesthetic techniques, minimally invasive procedural risks and adverse-event prevention.

The literature search took place between October and November 2026 in Scientific Electronic Library Online (SciELO), Latin American and Caribbean Health Sciences Literature (LILACS) and PubMed/MEDLINE, chosen for their relevance to health research dissemination.

Portuguese and English descriptors and keywords included aesthetic nursing, aesthetic procedures, patient safety, adverse events and complications. Terms were combined using AND and OR to broaden searches and identify studies relevant to the objectives.

Selection began with systematic title and abstract reading, considering thematic relevance and relationships to safety, complications and professional practice. Searches identified 15 articles. After reading titles, abstracts and available texts and applying eligibility criteria, 10 were excluded as outside the review scope or lacking sufficient relevant information for the guiding question. Five studies met the criteria and entered final analysis.

The five remaining studies were subsequently read in full for detailed assessment of objectives, methods and results. Reading confirmed their relevance to the synthesis, organized in a summary table and analyzed descriptively and comparatively.

The summary table brought together authors, publication years, study types and main findings. This facilitated evidence comparison and identification of recurring safety aspects. Descriptive comparative analysis considered procedural characteristics, reported complications, identified risk factors and preventive strategies in the publications.

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Evidence analysis identified mild and severe complications associated with aesthetic procedures, including edema, ecchymosis, hematomas, inflammatory reactions, infection, tissue necrosis and vascular occlusion.

Eligible studies were published between 2019 and 2024 and provided identifiable information on safety, complications or adverse-event management, with verifiable references and results. Publications outside the period, unrelated to the question or lacking sufficient data for analysis were excluded.

Ferreira and Diaz (2024) was directly related to aesthetic nursing and patient safety. Other selected studies addressed general aesthetic complications without allowing exclusive attribution of findings to nurse-performed procedures.

The investigation also analyzed serious adverse events and possible mortality records, considering available information on severity, circumstances and factors involved in clinical outcomes.

Limitations concerned specific records of nurse-performed procedures, as some literature did not identify the practitioner's professional category. This restricted direct links between severe outcomes and aesthetic nursing, particularly mortality.

The analysis also discussed benefits of aesthetic procedures under appropriate safety conditions, considering potential positive effects on self-esteem, body-image satisfaction and well-being, alongside opportunities to broaden nurses' professional roles.

Specialized training, scientific updating and care protocols were also examined as components of service quality, alongside risks, to balance potential benefits and literature-reported complications.

The primary outcome was assessment of nurse-performed procedural safety through identification and characterization of reported adverse events and complications. Their nature, severity, available frequency information and factors associated with severe outcomes, including possible mortality records, were examined.

The analysis sought elements related to professional training, techniques, prior patient assessment and biosafety compliance, considering their importance in preventing complications.

Secondary outcomes concerned aesthetic nursing care quality, including education, technical training, evidence-based practices and procedural standardization.

Less severe events, preventive measures and patient safety factors were also considered. Their investigation broadened understanding of aesthetic service quality and ethical and professional responsibility during interventions.

Finally, the synthesis integrated publication findings to identify convergences, divergences and knowledge gaps. Interpretation considered methodological limitations and the need to distinguish general procedural evidence from nursing-specific information.

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The integrative review thus systematized evidence on safety, adverse events and prevention factors, supporting scientific discussion of aesthetic nursing care quality and safety.

4 Results and discussion

Table 1: Summary of the articles.

Author and year	Objective	Methodology	Results	Conclusion
Ferreira and Diaz (2024)	Analyze nurses' role, competencies and patient safety in aesthetics.	Integrative, descriptive qualitative review; summary table of 12 publications.	Twelve publications discussed competencies, regulation and safety in aesthetic care.	Nursing can contribute to quality and safety; service safety programs are recommended.
Murray et al. (2021)	Provide guidance to identify and manage hyaluronic acid filler-induced vascular occlusion.	Clinical guideline/ management consensus.	Describes ischemia pathophysiology, clinical signs, perfusion assessment and occlusion recognition and management.	Early recognition, clinical assessment, protocols and referral pathways are fundamental to reducing harm.
Yi et al. (2024)	Investigate filler volume capable of obstructing the ophthalmic artery.	Experimental anatomical study of 29 cadavers.	Supratrochlear, supraorbital and dorsal nasal artery injections showed that small volumes can obstruct the ophthalmic artery in the experimental model.	Even small volumes can obstruct arteries in this model, emphasizing anatomical knowledge; findings do not estimate clinical incidence.
Botha and Insull (2024)	Review causes and management of sight-threatening complications after filler injections.	Literature review.	Describes retrograde filler embolization into the ophthalmic arterial system as a likely visual-loss mechanism; discusses recognition and management.	Visual loss is rare but potentially devastating; early recognition and specialist management are essential.
Doyon et al. (2024)	Update published partial or complete visual-loss cases after fillers.	Review of cases published between September 2018 and March 2023.	365 new cases; among 318 with outcomes, 68.2% had no visual recovery, 25.8% partial improvement and 6.0% complete recovery.	Visual loss is rare but serious; published cases cannot establish incidence or absolute risk.

Source: Prepared by the author (2026), based on the selected studies.

The five-study synthesis was organized into three areas: patient safety in aesthetic nursing; prevention and management of filler-associated vascular occlusion; and severity of ophthalmological complications. Selection considered only 2019–2024 publications with confirmed bibliographic data and retrievable results.

Ferreira and Diaz (2024) conducted an integrative, descriptive qualitative review of 12 publications. They discussed competencies and professional regulation and emphasized safety programs in aesthetic services. The publication concluded that nursing could

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contribute to respectful, high-quality care, but demonstrated no specific complication or mortality rates.

Ferreira and Diaz (2024) identified regulation and safety programs as important care components. As an integrative review of 12 publications, its findings synthesize included literature rather than directly measure adverse-event rates.

Murray et al. (2021), Yi et al. (2024), Botha and Insull (2024) and Doyon et al. (2024) addressed filler risks, particularly vascular occlusion and possible ophthalmological consequences. Although relevant to safety, they did not specifically investigate nurse-performed procedures.

Clinical assessment, documentation and follow-up are relevant to practice but were not comparably quantified across the five studies. They are therefore presented as general safety recommendations, not specific findings attributed to all articles.

Murray et al. (2021) published a guideline for recognizing and managing hyaluronic acid filler-induced vascular occlusion. It describes ischemia signs, rapid evaluation and management and referral pathways. It is a clinical guideline rather than a prevalence study, and must not be interpreted as estimating event frequency.

The guideline emphasizes ischemia recognition and perfusion assessment following filler administration, as well as protocols and timely referral when occlusion is suspected.

Selected studies did not assess infection frequency in aesthetic clinics or compare biosafety protocols. They therefore support no specific conclusions on infection rates, hygiene or cross-contamination.

For vascular complication prevention, publications emphasized anatomical knowledge, injection technique and early recognition of perfusion changes. Findings mainly concern fillers and should not be generalized to all aesthetic procedures.

The sample included no observational studies measuring safety indicators in aesthetic nursing clinics. This literature gap limits comparison of care indicators.

Although indicators and reporting systems help monitor quality, the five studies provided insufficient data to estimate their use or effectiveness in aesthetic nursing services.

Risk management was addressed practically in Murray et al. (2021), with guidance on occlusion identification and management. Other complication studies complemented understanding of event severity.

Individualized assessment, anatomical knowledge and referral pathways are consistent with vascular findings. However, the review identified no data comparing effectiveness of specific protocols across professionals or services.

Yi et al. (2024) examined 29 cadavers and injected filler into arterial branches connected to ophthalmic circulation. Relatively small volumes obstructed the ophthalmic artery in the anatomical model. This experimental finding demonstrates anatomical possibility, not clinical incidence in patients.

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Botha and Insull (2024) reviewed sight-threatening complications after fillers, describing retrograde embolization as a likely visual-loss mechanism and emphasizing early recognition and specialist management.

In Brazil, COFEN Resolutions No. 626/2020 and No. 715/2023 established provisions for aesthetic nursing practice and specialized education. Regulation defined competencies and responsibilities, although rules alone did not guarantee freedom from adverse events.

Selected filler studies documented potentially severe vascular and ophthalmological complications. They did not systematically examine all adverse events in minimally invasive procedures or identify practitioner profession in all cases.

Doyon et al. (2024) updated published visual-loss cases after fillers, identifying 365 new cases published between October 2018 and March 2023. Among 318 with outcome information, 68.2% had no recovery, 25.8% partial improvement and 6.0% complete recovery. These describe published cases, not absolute risk or occurrence rates.

Ferreira and Diaz (2024) was the only study directly addressing patient safety in nurse-performed procedures. The other four addressed general filler risks and must be treated as supplementary evidence rather than nursing-specific findings.

Taken together, studies showed that vascular and ophthalmological complications can be serious, although described as rare. They did not identify practitioner profession for all procedures and therefore cannot attribute events to nurses.

Direct aesthetic nursing evidence remained concentrated in Ferreira and Diaz (2024). Other publications characterized general filler risks without providing specific evidence about patients treated by nurses.

The synthesis distinguishes nursing practice safety, discussed by Ferreira and Diaz (2024), from clinical filler risks addressed by other studies. This avoids attributing findings to nursing when practitioner profession was unidentified.

Different designs and objectives prevented meta-analysis or quantitative comparison. The synthesis was therefore descriptive, respecting each publication’s scope and limitations.

Serious-event discussion emphasized procedural risks without unwarranted generalization. Complications depended on technique, patient conditions, region treated and capacity for recognition and management. Risks reported across professional categories could not automatically be attributed to nurses. This distinction prevented extrapolation beyond available evidence.

Mortality was particularly relevant to the research question. However, available references provided no specific death rate for nurse-performed procedures. Lack of confirmed mortality data also prevented causal links between practice and possible fatal

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outcomes. Caution was required because identifying serious complications did not necessarily indicate death.

Minimally invasive procedures also needed differentiation from more complex surgery. Filler, injection and skin-treatment risks could not be directly equated with surgical risks, given differences in technique, setting and care requirements. Mortality investigation therefore needed procedural characteristics and practitioner profession identification.

Important limitations include a small confirmed literature base and four of five studies addressing filler complications without specifying practitioner profession. Nursing-specific event and mortality rates cannot be calculated. This is an evidence gap rather than proof of no risk.

The five studies confirmed the relevance of qualifications, anatomical assessment, early ischemia recognition and management and referral pathways. Only Ferreira and Diaz (2024) directly addressed aesthetic nursing; frequency or mortality conclusions specific to nurses cannot be drawn from the others.

Patient safety thus depended on integrated qualifications, individualized assessment, appropriate care conditions and applicable regulations. Verified information did not establish any particular complication or mortality frequency for nurse-performed procedures.

The main contribution was identifying safety assessment factors and recognizing evidence limitations, reinforcing the need for specific, methodologically sound research on aesthetic nursing.

5 Conclusion

This study analyzed evidence on safety and mortality of nurse-performed aesthetic procedures in 2019–2024 publications. Five studies had confirmed bibliographic data and results; only one directly addressed aesthetic nursing.

Aesthetic nursing required specific technical and scientific knowledge, specialized training and responsibility. Minimally invasive procedures offered appearance, self-esteem and well-being benefits but carried risks throughout care. Safety depended on proper technique, clinical assessment, individualized planning and follow-up.

Potential complications included edema, hematomas, ecchymosis, inflammation, infection, tissue necrosis and vascular changes. Varying severity emphasized anatomy, appropriate materials and early warning-sign identification.

Minimally invasive procedures were not completely risk-free and required preventive measures and preparedness to manage complications.

Safety factors included training, protocols, biosafety and suitable products and equipment. Clinical assessment, contraindications, records and patient guidance were

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important to care organization. Scientific updating and respect for professional competencies supported responsible practice.

Selected studies provided no data to calculate deaths specifically associated with nurse-performed procedures. Visual loss and other severe complications cannot be equated with mortality or attributed to a profession without specific information.

Limitations included few confirmed publications and most studies addressing fillers without identifying practitioner profession. Results cannot estimate complication frequency or nursing-specific mortality rates.

Safety was associated with qualifications, regulatory compliance, biosafety and evidence-based care. Adverse-event prevention remained essential to physical integrity and service quality.

Further research specifically on aesthetic nursing is needed, emphasizing identification, reporting and monitoring of procedural complications.

Well-designed studies with reliable adverse-event and serious-outcome records could improve protocols, strengthen regulation and promote safer practices. The study reinforced ethical, responsible and scientifically grounded practice focused on risk prevention and protection of aesthetic patients' health.

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