

# Reporting Nasal Pressure Injuries in Neonates Receiving Non-Invasive Ventilation: A Scoping Review



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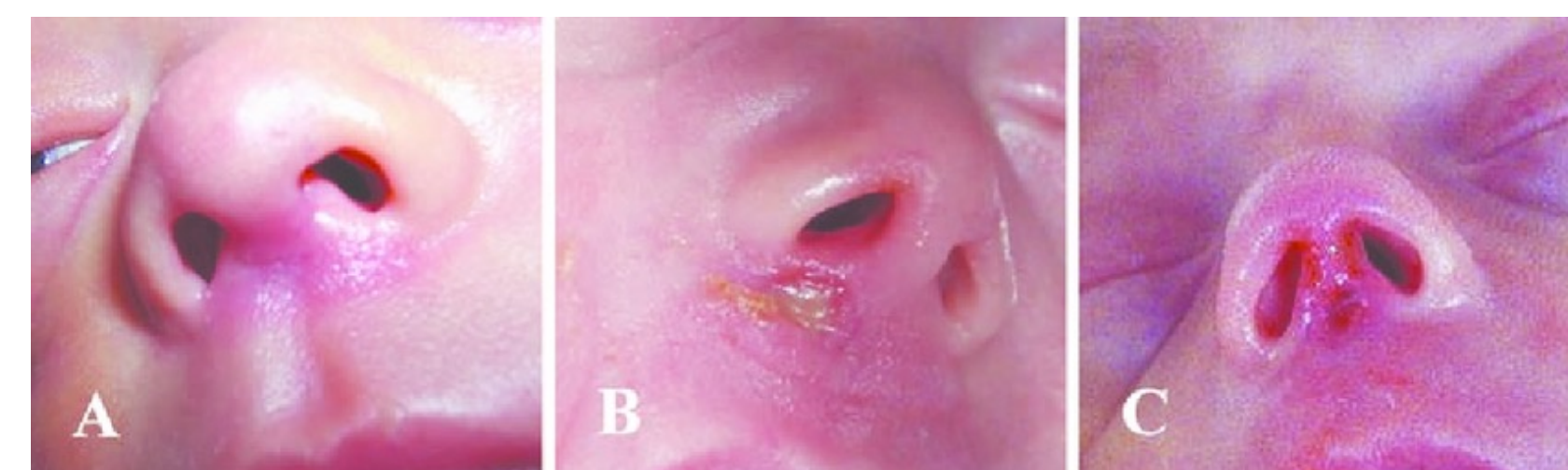
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## INTRODUCTION

- Non-invasive ventilation (NIV) use in the NICU as a primary mode of respiratory support has increased in recent years because it avoids the harmful sequelae of endotracheal intubation.<sup>1</sup>
- NIV is a broad category of devices delivering O<sub>2</sub> through nasal mask or binasal prong.
- Widespread use of NIV has revealed a new set of unique complications.
- Pressure injuries are caused by mechanical friction, pressure on underdeveloped skin, and the prolonged need for respiratory support due to prematurity.<sup>2,3</sup>
- Columellar and septal necrosis can lead to permanent functional deformities of the nose that may require complex reconstruction.<sup>4</sup>
- Efforts to standardize reporting of these injuries are limited.
- Nasal injury classification systems are important to improve documentation, facilitate communication, enhance clinical decision making, ensure consistency in practice, and enable comparison between research studies.
- The aim of our scoping review is to examine the reporting practices and classification systems of nasal pressure injuries in neonates on NIV.



I. Erythema, not blanching, otherwise intact skin  
II. Superficial ulcer or erosion, partial thickness skin loss  
III. Necrosis with full thickness skin loss

Figure 1: Fischer Scale<sup>5</sup>

## METHODOLOGY

- **Databases:** PubMed, Embase, and Web of Science
- **Inclusion criteria:** (1) Published after May 2000, (2) Full, English text available, (3) Primary research including RCTs, case control series, cohort studies, case series (n>3), QI projects (n>3), (4) reporting on nasal trauma
- **Exclusion criteria:** (1) No outcome reporting, (2) Injury unrelated to NIV, (3) Primary focus of injuries not nasal, (4) Non-English publication, (5) secondary research (e.g., systematic reviews)
- Methodology from the Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews was used.
- **Primary outcome:** Classification system usage
- **Secondary outcomes:** Use of protocol for skin integrity assessment, nasal endoscopy, nasal subsite-specific details, photographic reporting, follow-up after discharge, and others

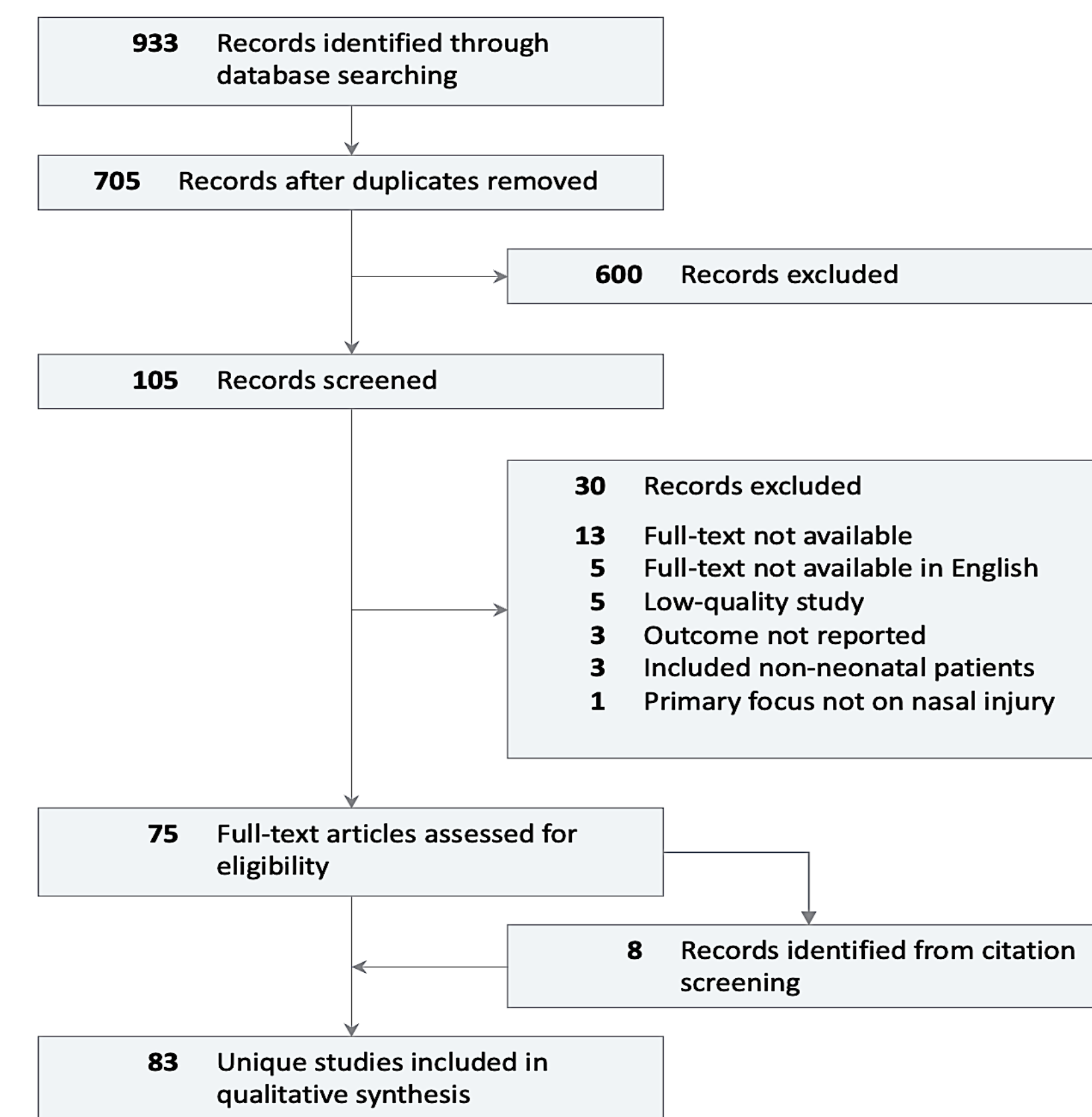
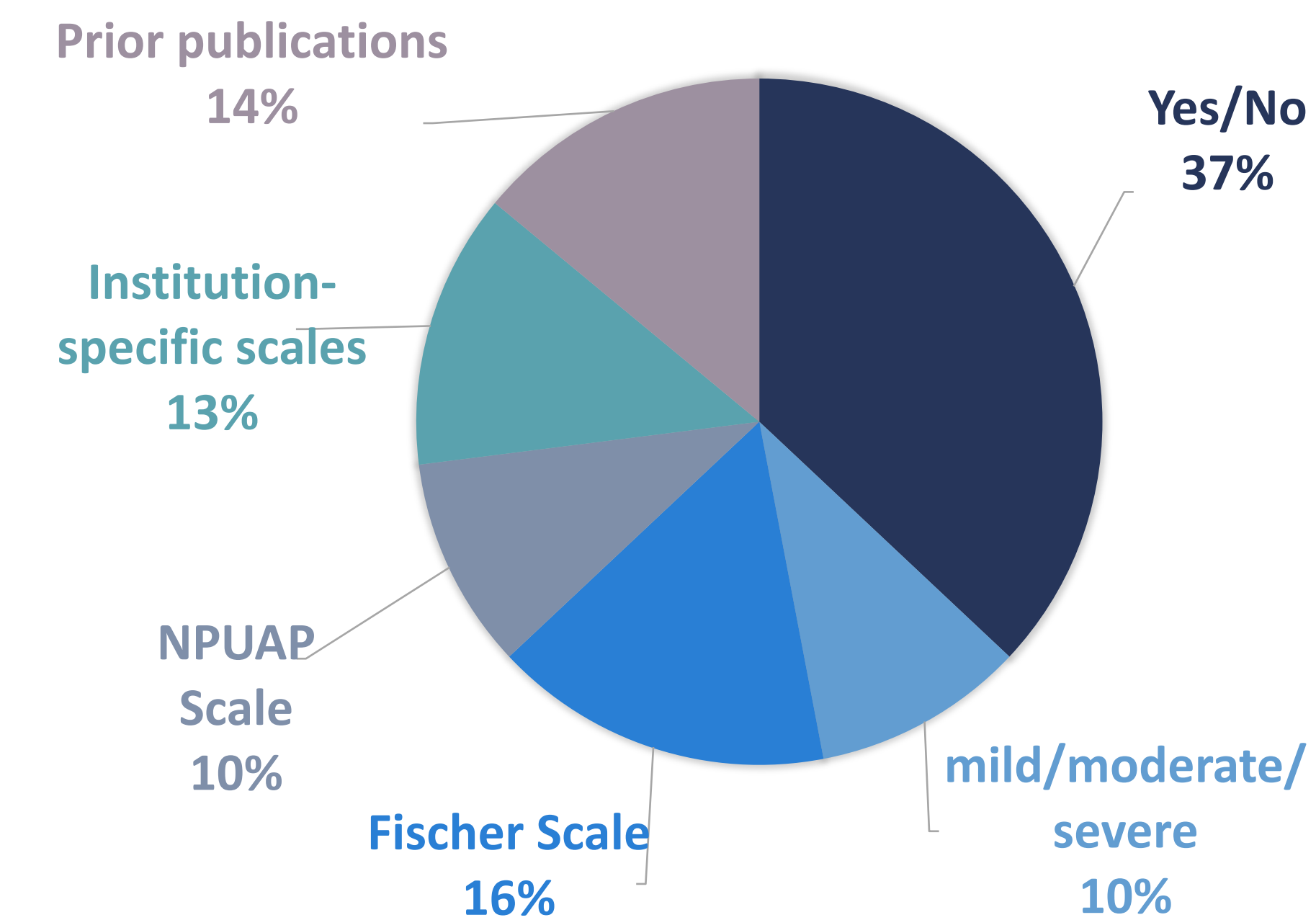


Figure 2: PRISMA Flow Diagram

## RESULTS

- 705 titles were screened and 83 met inclusion criteria, including 13,705 patients.
- The majority of studies were RCTs (52%), cohort studies (31%), and case series (6%).
- The most common NIV device used was nCPAP with prongs.

### CLASSIFICATION SYSTEM USAGE



REPORTING MEASURES	NUMBER USED (%)
Protocol for skin integrity assessment	48 (58%)
Frequency of skin integrity assessment	39 (47%)
Use of nasal endoscopy	2 (2%)
Nasal injury subsite-specific detail	21 (25%)
Photographic reporting	9 (11%)
Patient follow-up after discharge	6 (7%)

Table 1: Reporting of Secondary Outcomes

## DISCUSSION

- Despite the Fischer scale being well known, it is not well utilized in the literature.
- There are no standardized classification systems that utilize endoscopy for intranasal injury and describe nasal anatomic subsite involvement, which are important factors for predicting outcomes and future management.<sup>4</sup>
- Only 58% of studies described a protocol for skin integrity assessment despite its importance in evaluating injury.
- Study limitations include: 1) including papers that mentioned any nasal trauma reporting, even if not a primary outcome, 2) literature may not reflect real world practice

## CONCLUSION

- A wide heterogeneity in the reporting of neonatal nasal pressure injuries from NIV exists.
- Developing a standardized classification system would create an opportunity to improve communication of injuries, facilitate future intervention, and better understand and predict the sequelae of the injuries.

## REFERENCES

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