

Obstetric Peripheral Nerve Injuries Associated with Vaginal Delivery: A Scoping Review

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INTRODUCTION

- Peripheral nerve injuries associated with vaginal delivery are a rare complication but can contribute toward postpartum morbidity and functional impairment.^{1,4}
- Obstetric neuropathies may involve the lumbosacral plexus and individual peripheral nerves, including the pudendal, femoral, and obturator nerves.^{3,5}
- Childbirth **increases susceptibility** for nerve injury through several factors: operative delivery, lithotomy positioning, and prolonged second stage.^{2,3}
- Despite their clinical relevance, such nerve injuries may be difficult to recognize and remain **incompletely characterized** in the literature.
- The **aim of this review** was to portray the holistic picture of nerve injuries resulting from vaginal delivery including:
 - Nerves affected.
 - Mechanisms of injury.
 - Risk factors.
 - Clinical manifestations.

METHODS

- Review conducted following **JBIM methodology** and with **PCC framework**.
- Databases comprehensively searched: **PubMed, Embase, and Web of Science**.
- Population:** Pregnant and postpartum patients with documented peripheral nerve injury from vaginal delivery, including operatively and non-operatively.
- Dual independent review was executed at all stages, with designated reviewers to resolve disagreements.
- Data extraction with standardized Excel sheet and narrative synthesis performed.

RESULTS

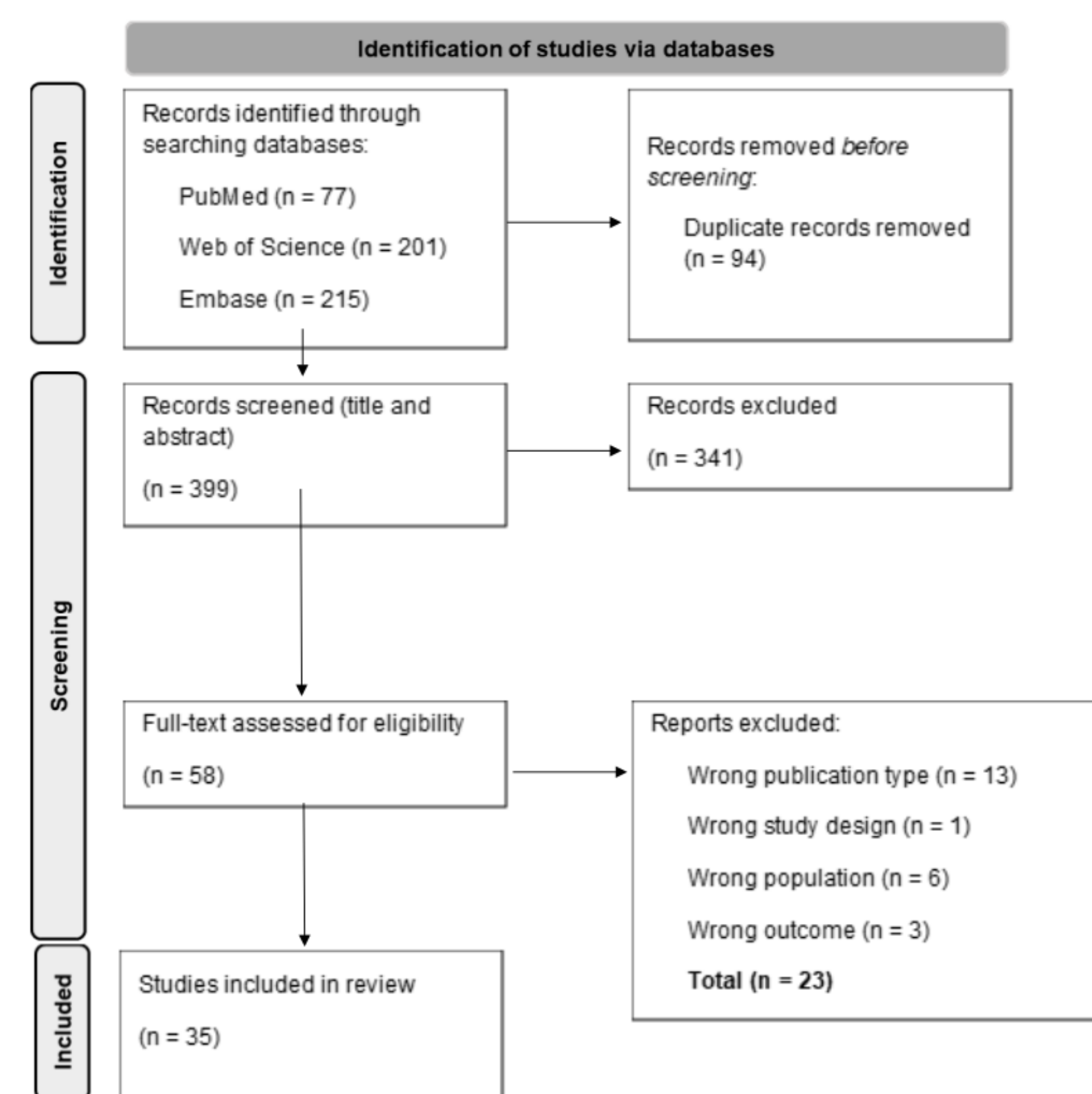


Figure 1. PRISMA 2020 Flow Diagram.

	Femoral nerve	Obturator nerve	Sciatic/lumbosacral plexus	Pudendal/sacral-pelvic nerves
Motor	Quadriceps/knee-extension weakness; decreased/absent patellar reflex	Hip adduction weakness; hip flexion weakness	Foot drop; weakness of dorsiflexion and/or plantar flexion; inversion/eversion; hamstring weakness; absent or diminished Achilles reflex	Pelvic-floor/anal sphincter weakness
Sensory	Numbness/paresthesia or decreased sensation over anterior/anteromedial thigh and/or medial leg	Medial thigh sensory changes/hyperesthesia; may have intact sensation	Posterior/lateral leg and foot paresthesia, numbness, or hyposthesia (distribution varies with level of plexus involvement)	Perineal/vaginal paresthesia or numbness; altered pelvic-floor sensation
Pain	Not prominent; May have inguinal/femoral distribution pain	Medial thigh/groin pain	Radiating leg/foot pain or burning; may be painless	Perineal/pelvic neuropathic pain; potential pudendal neuralgia
Pelvic/autonomic	Not prominent	Not prominent	Urinary/defecatory dysfunction	Urinary incontinence/retention, fecal/flatulent incontinence or urgency, impaired rectal sensation, sexual dysfunction
Functional Consequence	Knee buckling; inability to bear weight; difficulty standing or walking	Difficulty raising/crossing their legs	Gait disturbance/foot drop; difficulty standing or walking	Continence problems, pelvic-floor dysfunction; chronic pain can lead to impairment of daily life

Table 1. Clinical manifestations based on nerve injured

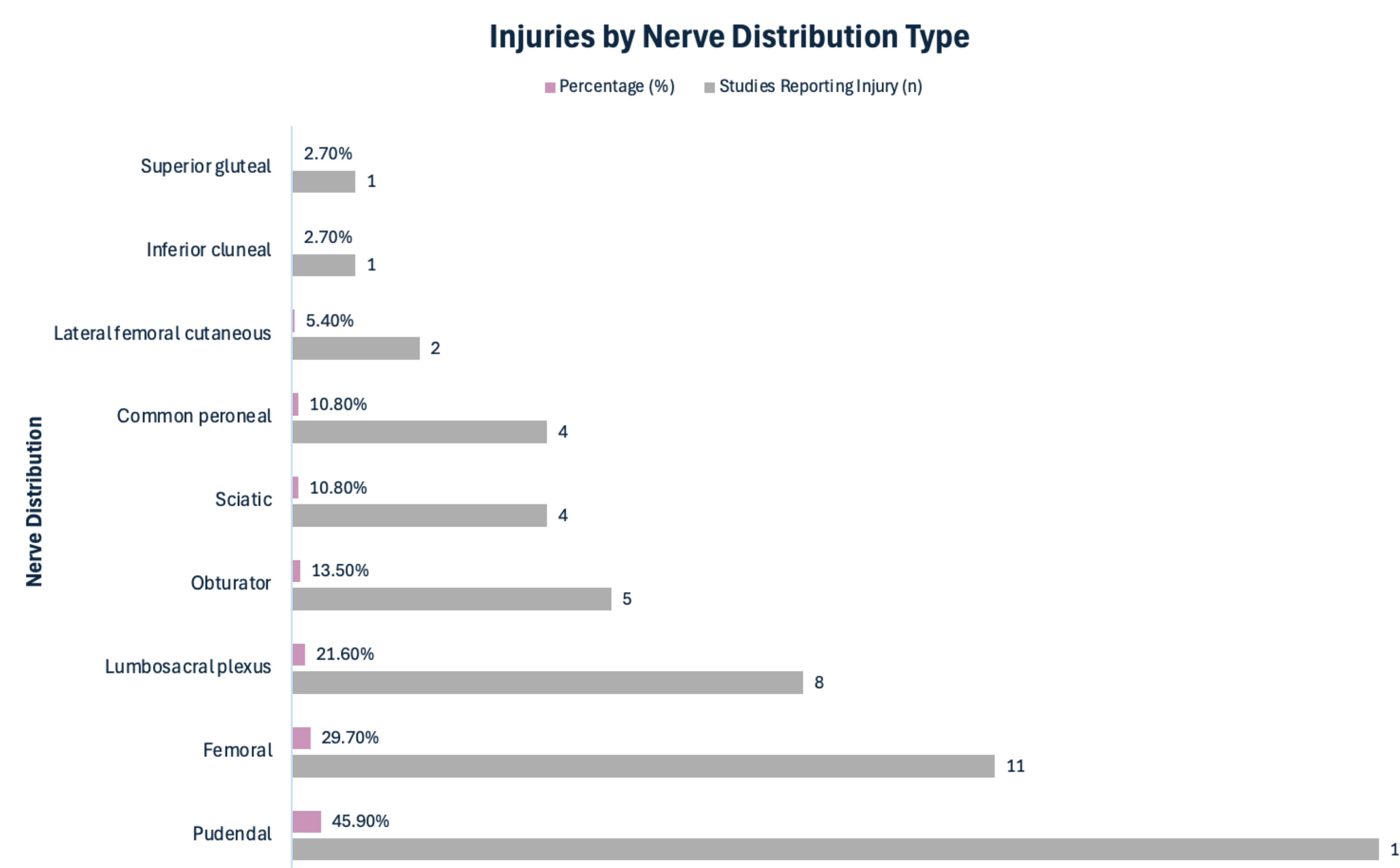


Figure 2. Distribution of nerve injuries reported across included studies. Categories were not mutually exclusive, as studies could report more than one nerve injury; therefore, percentages do not sum to 100%

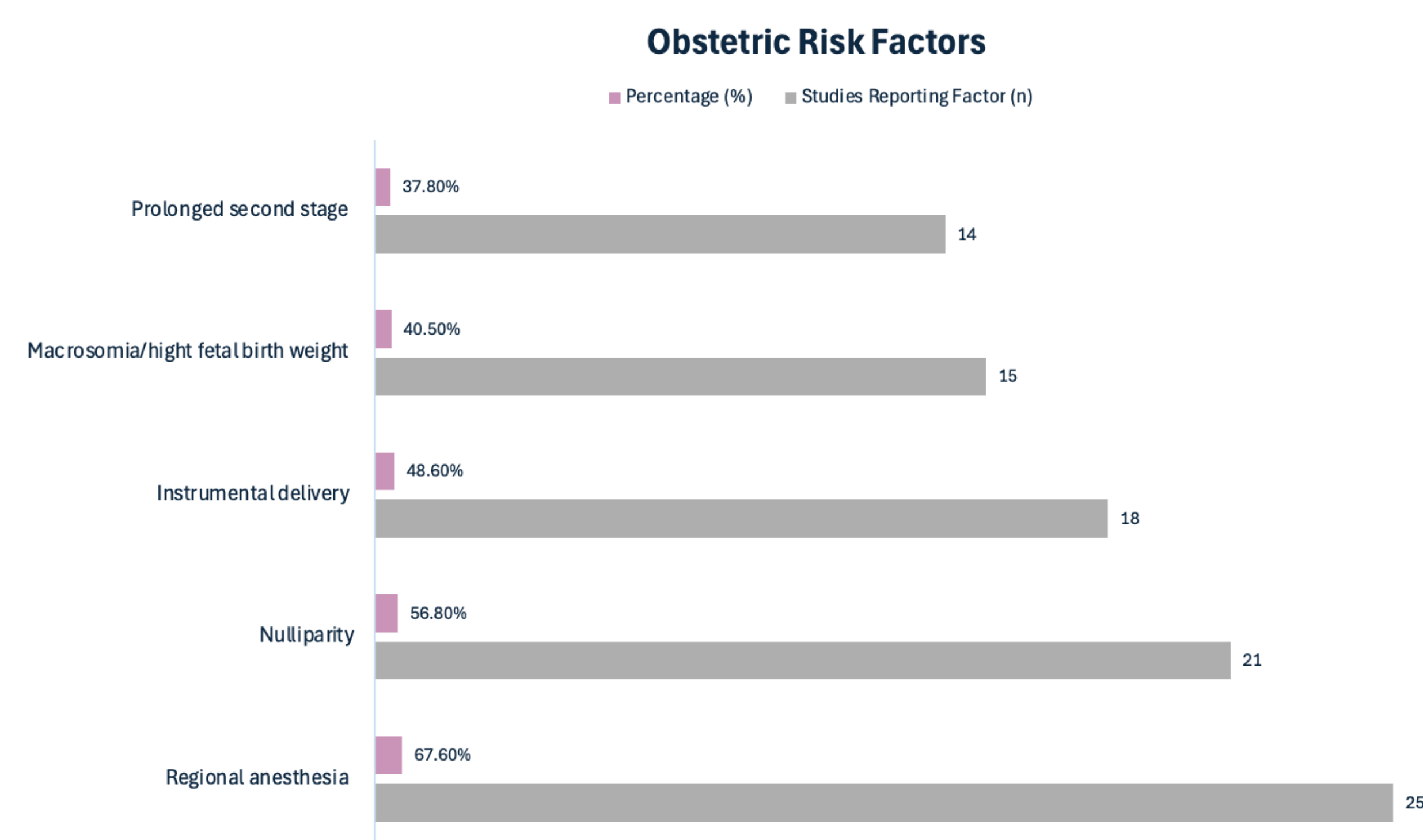


Figure 3. Obstetric risk factors reported across included studies. Categories were not mutually exclusive, as studies could report more than one risk factor; therefore, percentages do not sum to 100%

Key Takeaways

- The **pudendal nerve** was most commonly injured and associated with pelvic-related symptoms, including various types of incontinence, reduced squeeze pressure, and perineal paraesthesia.
- Proposed mechanisms most often involved **compression and traction** related to fetal descent.
- Nulliparity, regional anesthesia use, and operative vaginal delivery are among the **highest and most reported factors** that increase risk for peripheral nerve injury secondary to childbirth.

DISCUSSION

- Pudendal and femoral nerves were most frequently injured followed by the lumbosacral plexus.
- Mechanical** mechanism of injury during labor and delivery was recurrently reported and identified.
- Overlapping obstetric factors suggest a **multifactorial etiology** toward injury rather than a single, identifiable risk or cause.
- Lower-extremity weakness** and **sensory disturbances** are among the most commonly reported symptoms by postpartum parturients.
- Clinical **course of recovery** varied by nerve and injury severity, with a majority of motor symptoms improving over weeks to months.

CONCLUSION

- Obstetric peripheral nerve injuries have a significant impact on patient presentation and functionality postpartum.
- Clinical manifestations vary depending on nerve involvement and include motor, sensory, pelvic, and functional findings.
- Greater awareness** of peripheral nerve injuries associated with vaginal delivery may support **earlier recognition** and encourage more **proactive management** of patients during labor.
- Variability in study design, diagnostic criteria, and outcome reporting **limited direct comparison** across studies.

Future direction: standardized studies are needed to better define risk factors and outcomes.

REFERENCES

