ONCODAILY MEDICAL JOURNAL

abstract

Surgical Outcomes of Congenital Brain Tumors in Low-and-Middle-Income-Countries: A Systematic Review

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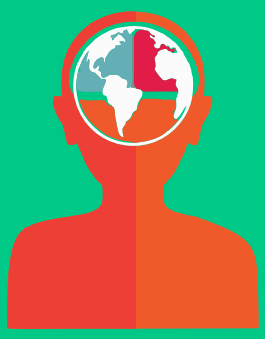
DOI: 10.69690/ODMJ-018-0425-5364



6th Pakistan Pediatric Neuro-Oncology Symposium, Pakistan, 2025

abstract

Surgical Outcomes of Congenital Brain Tumors in Low-and-Middle-Income-Countries: A Systematic Review

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Introduction: Congenital brain tumors, defined as intracranial tumors diagnosed in children within the first year of life, generally present with worse outcomes compared to children diagnosed later in life and in adults, such as higher mortality and lower survival rates. Reportedly, the surgical outcomes of tumor resection are worse in low-and middle-income countries (LMICs) compared to high-income countries. Our objective is to conduct a systematic review/meta-analysis to assess the outcomes of congenital brain tumors in countries included in the 2022 World Bank Classification of LMICs.

Methodology: We systematically searched PubMed, Scopus, and Embase until July 16th, 2025. Retrospective studies, randomized controlled trials, and prospective studies that evaluated outcomes of surgical resection of brain tumours of children under 1 year of age in LMICs in at least 10 patients were included. Data related to study design, baseline characteristics, tumor histopathology, location, and outcomes, including mortality, extent of resection, and morbidity, were extracted. Publication bias and Risk of Bias were also evaluated. This review adhered to PRISMA guidelines.

Results: Out of 5,693 studies, 6 studies were included. Resection was most commonly performed, while biopsy was rare. Overall mortality rate was variable, ranging from 24% to 56.7%. A wide variety of surgical complications were noted as well, from

cranial nerve palsies and CSF diversion needed postoperatively.

Conclusion: Congenital brain tumor surgeries in LMICs show high mortality and postoperative morbidity. Outcomes reflect limited neurosurgical resources and highlight the need for improved surgical infrastructure and perioperative care in these settings.

Conflict of Interest: None

Funding: None

Disclosure statement: None

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