The global market for neurotechnology was 12.82 billion USD in 2022 and is expected to reach 17.1 billion USD in 2026 and 38.17 billion USD by 2032. These projections parallel a time where neurological and psychiatric diseases are the leading cause of disability and the second leading cause of death worldwide.

The applications of neurotechnology continue to expand, from its uses in describing brain functions to the development of implantable closed-loop deep brain stimulation (DBS) systems.

The financial impact on patients and caregivers remains understudied. Where neurological and psychiatric diseases are the leading cause of disability and the second leading cause of death worldwide. Although some studies have reported the financial impact of neurotechnologies, much of the literature is based on a lack of transparency in reimbursement streams and a lack of understanding of insurance coverage and out-of-pocket costs. In epilepsy studies conducting healthcare cost analyses, direct-to-patient costs spanned $11,276/year, with total-lifetime-indirect-costs of $385,505.58 (Begley et al., 2000).

Other studies found rTMS cost-effective to antidepressant medication for major depressive disorder, but savings depended on early use (Voight et al., 2017). Electronic Health Record (EHR) and claims data may shed light on insurance coverage and out-of-pocket costs, but there are barriers to their use. Furthermore, the lack of transparency in reimbursement streams by the Center for Medicare and Medicaid Services (CMS) impedes patients’ and caregivers’ ability to consider costs in decision-making.

Of 170 articles reviewed, existing research is infrequent and sparse, using vague words e.g., “cost-effective,” “low-cost,” and “affordable,” to describe neurotechnologies, which fail to capture patient costs. Only 16 articles examined the cost of various neurotechnologies. The extent of insurance coverage for existing and emerging neurotechnology varies and is unclear. In epilepsy studies conducting healthcare cost analyses, direct-to-patient costs spanned $11,276/year, with total-lifetime-indirect-costs of $385,505.58 (Begley et al., 2000). Other studies found rTMS cost-effective to antidepressant medication for major depressive disorder, but savings depended on early use (Voight et al., 2017).

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Of the 170 studies reviewed, only 16 examined the financial cost of various neurotechnologies, while none investigated the socioeconomic burdens patients may face in accessing these vital interventions, highlighting a crucial gap in understanding in current neurotechnological research.

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