International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Functional Capacity and Quality of Life after Traumatic Brain Injury: A Narrative Review of Current Evidence

Vikram Singh Deora[1], Mr. Kumarasamy AP[2], Dr. Mamta Verma[3] Mukesh Kumar G[4]

[1]Department of Neuroscience Nursing, College of Nursing, AIIMS Bhopal, Madhya Pradesh, India
[2]Assistant Professor, Department of Medical Surgical Nursing, College of Nursing, AIIMS Bhopal, Madhya Pradesh, India
[3]Associate Professor, Department of Pediatric, Nursing, College of Nursing, AIIMS Bhopal, Madhya Pradesh, India
[4]Department of Psychiatric Nursing, College of Nursing, AIIMS Bhopal, Madhya Pradesh, India

ABSTRACT

Background: Traumatic brain injury (TBI) is a major cause of mortality, disability, and long-term psychosocial impairment worldwide. Although advances in acute medical and neurosurgical management have improved survival rates, many survivors continue to experience persistent physical, cognitive, emotional, and social difficulties that negatively affect functional independence and quality of life. This narrative review aims to summarize current evidence regarding functional recovery and quality of life after traumatic brain injury and to identify major biological, psychological, and social factors influencing long-term outcomes.

Methods: A narrative review of peer-reviewed literature published between 2010 and 2025 was conducted using electronic databases including PubMed, ONOS and Google Scholar. Studies evaluating functional outcomes, rehabilitation effectiveness, psychosocial adaptation, and quality of life after traumatic brain injury were included. Longitudinal cohort studies, observational studies, rehabilitation studies, systematic reviews, and meta-analyses involving adult TBI populations were reviewed. The evidence was synthesized under two major domains: functional outcomes and quality-of-life outcomes.

Results: The reviewed evidence demonstrated that recovery after traumatic brain injury is prolonged, multifactorial, and highly individualized. Functional independence generally improved over time, particularly among individuals receiving structured comprehensive rehabilitation. Better outcomes were associated with younger age, lower injury severity, higher Glasgow Coma Scale scores, better cognitive functioning, early rehabilitation initiation, family support, and successful vocational reintegration. However, persistent cognitive deficits, emotional disturbances, depression, anxiety, fatigue, and reduced social participation remained major barriers to complete recovery. Health-related quality of life was strongly associated with emotional well-being, psychosocial adaptation, community participation, and functional independence.

Conclusion: Traumatic brain injury significantly affects long-term functional capacity and quality of

life. Comprehensive rehabilitation, long-term follow-up, psychosocial support, and patient-centered outcome assessment remain essential for improving long-term recovery and overall well-being among TBI survivors. Additional multicenter longitudinal studies using standardized outcome measures are needed to improve understanding of long-term recovery trajectories.

Keywords: Traumatic brain injury; Functional recovery; Functional outcome; Health-related quality of life

INTRODUCTION

Traumatic brain injury (TBI) remains one of the leading causes of mortality, disability, and long-term psychosocial impairment worldwide.[1] Road traffic accidents, falls, sports injuries, assaults, and occupational trauma are among the major causes of TBI across both developed and developing countries.[2] Despite substantial advances in emergency medicine, neurocritical care, and neurosurgical management, many survivors continue to experience long-term neurological, cognitive, emotional, behavioural, and psychosocial difficulties.[3]

The long-term consequences of traumatic brain injury frequently interfere with independent living, social participation, employment, and community reintegration. Functional impairments commonly include weakness, impaired mobility, balance disturbances, memory deficits, attention impairment, executive dysfunction, communication difficulties, and emotional instability. These impairments significantly reduce the ability to perform activities of daily living and negatively affect long-term rehabilitation outcomes.[4]

Functional outcome is considered one of the most important indicators of recovery after traumatic brain injury. Functional capacity refers to the ability of an individual to perform physical, cognitive, emotional, and social activities necessary for independent living.[5]Recovery trajectories after TBI are highly variable and are influenced by injury severity, age, cognitive functioning, rehabilitation intensity, psychosocial adaptation, and family support.[6]

In recent years, increasing attention has been directed toward quality of life (QOL) as an important patient-centered outcome following traumatic brain injury. Health-related quality of life encompasses physical well-being, emotional health, cognitive functioning, social participation, vocational performance, autonomy, and life satisfaction. Although many individuals demonstrate gradual physical recovery, emotional distress, depression, anxiety, fatigue, and psychosocial difficulties often persist long after the initial injury.[7]

Longitudinal studies have shown that meaningful recovery may continue for several years after traumatic brain injury, particularly among patients receiving structured comprehensive rehabilitation and long-term psychosocial support.[8] Nevertheless, substantial heterogeneity exists in rehabilitation outcomes and quality-of-life trajectories, emphasizing the need for individualized rehabilitation planning and comprehensive long-term outcome assessment.[9]

This review article summarizes current evidence regarding functional recovery and quality of life after traumatic brain injury, with emphasis on rehabilitation outcomes, psychosocial adaptation, predictors of recovery, standardized outcome assessment tools, and future directions in neurorehabilitation.

METHODOLOGY

A narrative review methodology with systematic search and study selection procedures was adopted

to identify and synthesize evidence regarding functional capacity and quality of life after traumatic brain injury.

Search strategy

Electronic databases including PubMed, ONOS and Google Scholar were systematically searched for peer-reviewed studies published between 2010 and 2025.The search strategy included combinations of the following keywords related to functional capacity and quality of life related to traumatic brain injury.

"Traumatic Brain Injury", "Head Injury", "Functional Outcome" "Functional Recovery" "Activities of Daily Living" "Rehabilitation" "Quality of Life" "Psychosocial Outcomes"

Boolean operators (AND/OR) were used to refine the search results. Additional manual searches of reference lists were conducted to identify relevant studies.

Eligibility criteria

Inclusion criteria

Studies were included related to traumatic brain injury. Eligible studies included original experimental research, "Longitudinal cohort studies, observational studies, systematic reviews, and meta-analyses. Only full-text articles published in English were considered for inclusion. Studies involving adult patients with mild, moderate, or severe traumatic brain injury were included.

Exclusion criteria

Pediatric studies, conference abstracts, unpublished reports, editorials, and studies unrelated to traumatic brain injury were excluded.

Study Selection Process

The study selection process was conducted in two stages. Initially, titles and abstracts of retrieved records were screened to exclude clearly irrelevant articles. Subsequently, full-text screening was performed for potentially eligible studies to determine final inclusion based on the predefined eligibility criteria. Studies meeting the inclusion criteria were retained for synthesis. Any uncertainties during the selection process were resolved through careful review and consensus.

Data Extraction

Data were extracted using a standardized data extraction form. Information collected included first author, year of publication, study design, country, sample size, participant characteristics, intervention details, outcome measures, and key findings related to functional capacity and quality of life after traumatic brain injury.

Data synthesis

The evidence was synthesized narratively according to major themes including functional recovery, rehabilitation effectiveness, emotional health, psychosocial adaptation, cognitive recovery, community participation, and long-term rehabilitation outcomes.

RESULTS

Overview of included studies

A total of 10 studies were included in the review, comprising 6 studies related to functional outcomes and 5 studies related to quality-of-life outcomes following traumatic brain injury. The selected studies were grouped into two thematic domains: Functional outcomes after traumatic brain injury, Quality-of-life outcomes after traumatic brain injury.

Functional Outcomes after Traumatic Brain Injury

Sample review

Functional Level During the First 2 Years After Moderate and Severe Traumatic Brain Injury (Sandhaug et al., 2011)[10] Functional status showed marked improvement during the first year after traumatic brain injury, particularly during the rehabilitation phase. By the end of 12 months, the majority of patients were functionally independent.

Sample review

A study to evaluate functional outcomes in moderate-to-severe traumatic brain injury survivors (Al-Hassani et al., 2018).[11] Study conducted among 201 individuals with moderate-to-severe traumatic brain injury in Qatar examined functional outcomes following rehabilitation. The results demonstrated marked improvement in functional independence, with approximately 70% of participants achieving favorable recovery. Younger patients experienced better functional outcomes, while admission Glasgow Coma Scale scores were not found to be reliable predictors of rehabilitation success.

Sample review

A study to assess functional outcomes over the first year after moderate-to-severe traumatic brain injury in the prospective, longitudinal TRACK-TBI study (McCrea et al., 2021).[5] The study involved 484 individuals with moderate-to-severe traumatic brain injury and demonstrated marked functional recovery during the first year following injury. By 12 months, favorable outcomes were achieved by 52.4% of patients with severe TBI and 75% of those with moderate TBI. The findings suggest that meaningful recovery is possible over time, and severe disability in the early stages may not necessarily indicate poor long-term functional outcomes.

Sample review

A study to examine recovery patterns of body functions and activities of daily living performance across the progression and resolution of posttraumatic amnesia following traumatic brain injury (Walsh et al., 2025).[12]

The study involved 24 individuals with severe traumatic brain injury and explored changes in body functions and daily living activities during recovery from posttraumatic amnesia. The results indicated progressive and significant improvements in attention, balance, visual perception, and ADL performance. Strong associations were identified between functional abilities and daily living performance, suggesting that recovery occurs through interconnected improvements across multiple domains.

Sample review

A study to predict improvement in functional outcomes among traumatic brain injury patients after inpatient rehabilitation using machine learning models (Say et al., 2022).[13] The study involved 629 patients with traumatic brain injury undergoing inpatient rehabilitation. Results showed significant gains in motor and cognitive functional independence following rehabilitation. Machine learning models, especially Random Forest provided highly accurate predictions of functional recovery and demonstrated superior performance compared to conventional statistical approaches.

Sample review

Long-Term Functional Outcome and Quality of Life in Long-Term Traumatic Brain Injury Survivors Taalas et al. (2023)[14] The study investigated changes in functional recovery and quality of life over a 15-year period following traumatic brain injury. Results indicated that most survivors retained favorable functional outcomes; however, a considerable proportion experienced deterioration in functional status over time. Advanced age, lower initial GCS scores, and evidence of diffuse brain injury were associated

with poorer long-term outcomes. Furthermore, patients with stable or improved functional outcomes reported significantly better quality of life than those whose condition deteriorated. These findings emphasize the long-term impact of TBI and the close relationship between functional recovery and quality of life.

Quality of Life after Traumatic Brain Injury

Sample review

Mamman et al. (2024) – Biopsychosocial Factors of Quality of Life in Individuals with Moderate to Severe Traumatic Brain Injury: A Scoping Review[6] The review demonstrated that quality of life among individuals with moderate-to-severe traumatic brain injury is shaped by multiple interconnected biopsychosocial factors. Cognitive impairments, fatigue, reduced functional independence, and severe injury-related complications negatively affected quality of life. Psychological conditions, particularly depression and anxiety, were strongly associated with poorer outcomes across several quality-of-life domains. Conversely, positive coping strategies, self-efficacy, employment, community integration, and strong social support networks contributed to improved quality of life. The findings highlight the importance of addressing not only physical impairments but also psychological well-being and social reintegration during rehabilitation

Sample review

Rauen et al. (2020) – Quality of Life up to 10 Years After Traumatic Brain Injury: A Cross-Sectional Analysis[9] The study found that most individuals with traumatic brain injury maintained a satisfactory quality of life several years after injury. However, more than one-third of participants experienced unfavorable outcomes characterized by reduced autonomy, cognitive difficulties, and an increased risk of depression and anxiety. Injury severity at the time of trauma had only a minor influence on long-term quality of life, whereas independence in daily activities and cognitive abilities were more significant contributors to patient satisfaction. These findings emphasize the importance of rehabilitation programs that address cognitive and psychosocial needs in addition to physical recovery.

Table 1. Summary of Studies on Functional Outcomes and Quality of Life among Patients with Traumatic Brain Injury

First Author (Year)	Study Design	Country	Sample Size	Population Characteristics	Intervention Details	Measurement Tools
Sandhaug et al. (2011)	Prospective Longitudinal Study	Norway	65	Adults with moderate-to-severe TBI	Follow-up rehabilitation and recovery assessment	FIM, DRS
Al-Hassani et al. (2018)	Retrospective Cohort Study	Qatar	201	Moderate-to-severe TBI survivors	Inpatient rehabilitation program	FIM, RLA Scale
McCrea et al. (2021)	Prospective Longitudinal Study	USA	484	Patients with moderate-to-severe TBI	Standard care and follow-up	GOSE

Walsh et al. (2025)	Longitudinal Observational Study	Australia	24	Individuals with severe TBI	Recovery monitoring during post-traumatic amnesia	MPAI-4, FIM
Say et al. (2022)	Retrospective Cohort Study	Singapore	629	TBI patients undergoing inpatient rehabilitation	Multidisciplinary rehabilitation	FIM
Taalas et al. (2023)	Prospective Longitudinal Study	Finland	118	Long-term TBI survivors	Long-term follow-up assessment	GOS, GOSE, EQ-5D-5L
Mamman et al. (2024)	Scoping Review	Canada	52 Studies	Adults with moderate-to-severe TBI	Review of biopsychosocial factors affecting QoL	QOLIBRI, SF-36, WHOQOL-BREF
Rauen et al. (2020)	Cross-Sectional Study	Germany	135	Adults with mild, moderate, and severe TBI	Long-term post-injury assessment	QOLIBRI
Al-Azzaw & Al-Ameri (2024)	Cross-Sectional Study	Iraq	225	Adults with traumatic brain injury	Assessment at 6–12 months post-injury	QOLIBRI
Hume et al. (2023)	Prospective Follow-up Study	Australia	153	Older adults (≥65 years) with mild TBI and controls	Follow-up at 3 and 6 months	WHOQOL-BREF, DASS-21
Kreitzer et al. (2021)	Prospective Longitudinal Study	USA	2,579	TBI patients, orthopedic trauma controls, and healthy controls	Longitudinal assessment over 12 months	QOLIBRI-OS, SWLS

FOOTNOTES

FIM = Functional Independence Measure; DRS = Disability Rating Scale; RLA = Rancho Los Amigos Scale; GOSE = Glasgow Outcome Scale-Extended; GOS = Glasgow Outcome Scale; EQ-5D-5L = EuroQol Five-Dimension Five-Level; QOLIBRI = Quality of Life after Brain Injury; QOLIBRI-OS = Quality of Life after Brain Injury-Overall Scale; SWLS = Satisfaction with Life Scale; WHOQOL-BREF = World Health Organization Quality of Life-BREF; DASS-21 = Depression Anxiety Stress Scale-21.

Sample review

Al-Azzaw & Al-Ameri (2024) – Quality of Life Following Traumatic Brain Injury in Iraqi Patients.[15]
The study evaluated quality of life among 225 individuals with traumatic brain injury using the QOLIBRI scale. Findings revealed moderate satisfaction with cognition, emotional well-being, independence, and

social relationships. Cognitive and emotional domains showed higher satisfaction levels, whereas independence and social relationships scored comparatively lower. Participants also reported moderate dissatisfaction related to emotional feelings and physical functioning. Better quality-of-life outcomes were observed among those assessed more than nine months after injury, indicating gradual recovery over time. However, persistent emotional and physical difficulties underscored the need for ongoing rehabilitation and psychosocial support.

Sample review

Hume et al. (2023) – Quality of Life and Psychological Health After Mild Traumatic Brain Injury in Older People: Three- and Six-Month Follow Up.[8]

The study examined quality of life and psychological health among older adults with mild traumatic brain injury. Findings showed that participants experienced significantly lower overall and physical quality of life compared with community controls at both three and six months after injury. Although most individuals remained within normal quality-of-life ranges, psychological distress at three months was a significant predictor of poorer quality of life at six months. In contrast, injury severity, neuroimaging findings, and cognitive performance were not significant predictors of long-term quality-of-life outcomes, highlighting the importance of psychological well-being in recovery.

Sample review

A study to compare the Quality of Life after Brain Injury-Overall Scale (QOLIBRI-OS) and the Satisfaction with Life Scale (SWLS) as outcome measures for traumatic brain injury research (Kreitzer et al., 2021).[16] The study evaluated quality of life among individuals with traumatic brain injury and found that the QOLIBRI-OS more effectively identified injury-related changes and recovery patterns than the SWLS. Participants demonstrated gradual improvement in quality of life during the first year after injury. However, injury severity showed only a weak relationship with long-term quality-of-life outcomes, suggesting that factors beyond clinical severity influence recovery and well-being.

DISCUSSION

The reviewed evidence demonstrates that traumatic brain injury is associated with substantial long-term functional, cognitive, emotional, and psychosocial consequences that frequently persist beyond the acute recovery phase. Although many survivors exhibit gradual improvement in mobility, activities of daily living, cognitive functioning, and community participation, recovery trajectories remain highly individualized and influenced by multiple biological, psychological, and environmental factors.[16]

Longitudinal studies consistently indicate that functional recovery may continue for several years after injury, particularly among individuals receiving early and structured comprehensive rehabilitation. Moderate-to-severe TBI survivors frequently demonstrate improvement in independence and participation over extended follow-up periods; however, persistent cognitive deficits, fatigue, emotional disturbances, and reduced social participation continue to limit complete recovery in a considerable proportion of patients. Several studies included in this review reported that approximately 50–70% of moderate-to-severe TBI survivors regained independence in activities of daily living during long-term follow-up, whereas return-to-work outcomes remained considerably lower due to persistent cognitive and psychosocial impairments.[17]

An important finding across the reviewed literature is that physical recovery alone does not guarantee satisfactory psychosocial reintegration or improved quality of life. Emotional health, family support, vocational reintegration, community participation, and cognitive adaptation emerged as major

determinants of patient-centered recovery outcomes.[16] Disease-specific instruments such as the Quality of Life after Brain Injury (QOLIBRI) scale demonstrated greater sensitivity in identifying psychosocial and cognitive impairment compared with generic health-related quality-of-life assessment tools. This supports the increasing emphasis on patient-centered outcome assessment in modern neurorehabilitation practice.[18]

The reviewed evidence also supports the effectiveness of comprehensive rehabilitation interventions involving physical therapy, occupational therapy, speech therapy, cognitive rehabilitation, psychological counseling, and vocational rehabilitation. Early rehabilitation initiation and individualized rehabilitation planning were consistently associated with improved functional outcomes and psychosocial adjustment.[19] Although substantial advances have occurred in neurorehabilitation research, important challenges remain. Variability in rehabilitation protocols, injury severity, follow-up duration, and outcome measures limits direct comparison between studies. Although several studies demonstrated improvement in functional independence over time, inconsistency in rehabilitation intensity, patient populations, and outcome assessment methods limits comparison across studies and healthcare systems. Additionally, evidence regarding long-term vocational reintegration and psychosocial adaptation remains inconsistent across studies.[8]

Limitations

This review is limited by the inclusion of English-language studies only and the heterogeneity of study designs, outcome measures, and follow-up durations. The narrative synthesis approach may also introduce selection bias compared with a full systematic review and meta-analysis.

Future Recommendations

Future studies should also examine the impact of rehabilitation intensity, vocational reintegration, family support, and digital rehabilitation technologies on long-term functional outcomes and quality of life.

CONCLUSION

Traumatic brain injury remains a major cause of long-term disability and impaired psychosocial functioning worldwide. Recovery following traumatic brain injury is often prolonged, multifactorial, and influenced by neurological severity, emotional health, cognitive functioning, rehabilitation intensity, and social participation. Current evidence demonstrates that meaningful functional improvement may continue for several years after injury, particularly among patients receiving structured comprehensive rehabilitation. Functional independence, vocational reintegration, emotional stability, and psychosocial adaptation are strongly associated with improved quality of life. Despite advances in acute management and neurorehabilitation, many survivors continue to experience persistent cognitive deficits, depression, anxiety, fatigue, and social participation restrictions that negatively affect long-term well-being. Comprehensive rehabilitation, psychosocial support, standardized outcome assessment, and long-term follow-up remain essential for improving functional recovery and quality of life among traumatic brain injury survivors. The findings of this review support the importance of holistic and patient-centered rehabilitation strategies that address physical, cognitive, emotional, and social dimensions of recovery. Future neurorehabilitation research should focus on individualized rehabilitation planning, long-term psychosocial adaptation, digital rehabilitation technologies, and community reintegration programs to optimize long-term outcomes after traumatic brain injury.

REFERENCES

1. Baby P, Tyagi G, Srinivas D. Epidemiology and Prehospital Characteristics of Traumatic Brain Injury Patients Requiring Emergency Surgical Intervention: Survey from a Level I Neuro-Trauma Care Center. Neurology India. 2025 Jan;73(1):49–54. doi:10.4103/ni.ni_1155_22
2. Gerritsen H, Samim M, Peters H, Schers H, Laar FVD. Incidence, course and risk factors of head injury: a retrospective cohort study. BMJ Open. 2018 May;8(5):e020364. doi:10.1136/bmjopen-2017-020364
3. Barbiellini Amidei C, Salmaso L, Fedeli U, Saia M. Traumatic brain injury incidence and mortality: a large population-based study. J Neurol. 2024 Jul;271(7):4430–40. doi:10.1007/s00415-024-12386-1
4. Vu HM, Duong NN, Nguyen CD, Vu LG, Nguyen HT, Tran TH. Health-related quality of life among inpatients suffering from Traumatic brain injury in an urban setting in Vietnam. Babaee T, editor. PLoS ONE. 2024 Aug 6;19(8):e0308372. doi:10.1371/journal.pone.0308372
5. McCrea MA, Giacino JT, Barber J, Temkin NR, Nelson LD, Levin HS, et al. Functional Outcomes Over the First Year After Moderate to Severe Traumatic Brain Injury in the Prospective, Longitudinal TRACK-TBI Study. JAMA Neurol. 2021 Aug 1;78(8):982. doi:10.1001/jamaneurol.2021.2043
6. Mamman R, Grewal J, Garrone JN, Schmidt J. Biopsychosocial factors of quality of life in individuals with moderate to severe traumatic brain injury: a scoping review. Qual Life Res. 2024 Apr;33(4):877–901. doi:10.1007/s11136-023-03511-0
7. Ludin SM, Rashid NA. Health-related quality of life after 6 months post-injury on severe traumatic brain injury: A cohort study in two Malaysian hospitals. Enfermería Clínica. 2019 Sep;29:674–80. doi:10.1016/j.enfcli.2019.04.103
8. Hume CH, Mitra B, Wright BJ, Kinsella GJ. Quality of life and psychological health after mild traumatic brain injury in older people: Three- and six-month follow up. Brain Injury. 2023 Sep 19;37(11):1262–71. doi:10.1080/02699052.2023.2237882
9. Rauen K, Reichelt L, Probst P, Schäpers B, Müller F, Jahn K, et al. Quality of life up to 10 years after traumatic brain injury: a cross-sectional analysis. Health Qual Life Outcomes. 2020 Dec;18(1):166. doi:10.1186/s12955-020-01391-3
10. Sandhaug. Functional Level During the First Year After Moderate and Severe Traumatic Brain Injury: Course and Predictors of Outcome. J Neurol Res. 2011. doi:10.4021/jnr20w
11. Al-Hassani A, Strandvik G, El-Menyar A, Dhumale A, Asim M, Ajaj A, et al. Functional outcomes in moderate-to-severe traumatic brain injury survivors. J Emerg Trauma Shock. 2018;11(3):197. doi:10.4103/JETS.JETS_6_18
12. Walsh HS, Fleming J, Murillo N. Recovery patterns of body functions and activities of daily living performance across the progression and resolution of posttraumatic amnesia. Brain Injury. 2025 Jul 29;39(9):720–9. doi:10.1080/02699052.2025.2479823
13. Say I, Chen YE, Sun MZ, Li JJ, Lu DC. Machine learning predicts improvement of functional outcomes in traumatic brain injury patients after inpatient rehabilitation. Front Rehabilit Sci. 2022 Sep 22;3:1005168. doi:10.3389/fresc.2022.1005168
14. Taalas W, Raj R, Öhman J, Siironen J. Long-Term Functional Outcome and Quality of Life in Long-Term Traumatic Brain Injury Survivors. Neurotrauma Reports. 2023 Mar;4(1):neur.2023.0064. doi:10.1089/neur.2023.0064
15. Ula Munther Al-Azzaw, Laith Thamer Al-Ameri. Quality of Life Following Traumatic Brain Injury in Iraqi Patients. Ethiop J Health Sci. 2024 Apr 18;34(2). doi:10.4314/ejhs.v34i2.6

16. Kreitzer N, Jain S, Young JS, Sun X, Stein MB, McCrea MA, et al. Comparing the Quality of Life after Brain Injury-Overall Scale and Satisfaction with Life Scale as Outcome Measures for Traumatic Brain Injury Research. Journal of Neurotrauma. 2021 Dec;38(23):3352–63. doi:10.1089/neu.2020.7546
17. Nichol AD, Higgins AM, Gabbe BJ, Murray LJ, Cooper DJ, Cameron PA. Measuring functional and quality of life outcomes following major head injury: Common scales and checklists. Injury. 2011 Mar;42(3):281–7. doi:10.1016/j.injury.2010.11.047
18. Von Steinbüchel N, Wilson L, Gibbons H, Hawthorne G, Höfer S, Schmidt S, et al. Quality of Life after Brain Injury (QOLIBRI): Scale Validity and Correlates of Quality of Life. Journal of Neurotrauma. 2010 Jul;27(7):1157–65. doi:10.1089/neu.2009.1077
19. De Oliveira DV, Vieira RDCA, Pipek LZ, De Sousa RMC, De Souza CPE, Santana-Santos E, et al. Long-Term Outcomes in Severe Traumatic Brain Injury and Associated Factors: A Prospective Cohort Study. JCM. 2022 Oct 31;11(21):6466. doi:10.3390/jcm11216466