Journal of Ecohumanism
2024
Volume: 3, No: 8, pp. 13979 – 13986
ISSN: 2752-6798 (Print) | ISSN 2752-6801 (Online)
https://ecohumanism.co.uk/joe/ecohumanism
DOI: https://doi.org/10.62754/joe.v3i8.6545

Health-Related Quality of Life After TBI: A Systematic Review of Study Design, Instruments, Measurement Properties, and Outcome Health Related Quality of Life in Adults After Burn Injuries: A Systematic Review and Meta-Analysis

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Abstract

Psychological and cognitive disturbances resulting from falls, road traffic accidents, other incidents, and attacks haven't been sufficiently identified within the healthcare and social level in Japan.Aim: to measure the outcome Health-related quality of life in adults following burn injuriesMaterials and methods: This systematic review was conducted on five studies. The PRISMA statement, which stands for Preferred Reporting Items for Systematic Reviews and Meta-analyses, has been considered during the reporting process. Key parameters analyzed included TBI, health-related quality of life, and burn injuries.Results: Our meta-analysis for QOL after traumatic brain injury was assessed in three studies totaling 385 patients; our pooled MD and 95% CI were 29.07 [16.03, 42.12]. Major heterogeneity was detected among our pooled studies for this outcome with chi-p < 0.001 and I² 100%. Our meta-analysis for the HADS scale after traumatic brain injury was assessed in three studies totaling 984 patients; our pooled MD and 95% CI were 4.78 [1.57, 7.99]. Major heterogeneity was detected among our pooled studies for this outcome with chi-p < 0.001 and I² 100%.Conclusion: The analysis of overall QOL and general health revealed significant variability across studies, as did the assessment of psychological well-being, physical capacity, and social relations. Additionally, the Hospital Anxiety and Depression Scale (HADS) also showed considerable heterogeneity across the studies. These findings underscore the challenges in measuring the influence of TBI on health-related QOL and suggest the need for further research.

Keywords: *TBI, Burn Injuries, Health-Related Quality of Life.*

Introduction

Psychosocial and cognitive disturbances resulting from falls, road traffic accidents, other incidents, and attacks haven't been sufficiently identified within the healthcare and social level in Japan **(1).** Although the consequences of traumatic brain injury (TBI) have received greater attention, elevated brain function disorder resulting in executive function deficiencies, attentional disorders, and memory deficits needs additional consideration (2).

Individuals with traumatic brain injury frequently experience elevated brain dysfunction due to diffuse axonal injury and damage to the frontal lobe, involving executive dysfunction, memory dysfunction, apathy,

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and problems with emotional control (3). Individuals can face varying degrees of challenges related to psychological issues, influenced by environmental and personal factors. Due to the fact that impairments are frequently mild, it can be difficult to determine whether or not a case had a traumatic brain injury (4).

As a consequence, following traumatic brain injury, individuals frequently feel isolated, which contributes to the decline of their mental and physical health. Instruments evaluating cognitive, social, and psychological aspects of HRQOL are infrequently utilized in Japan, particularly among cases post-TBI (5).

Out of the few tools that have been translated and utilized in the Japanese language environment, the Quality of Life after Brain Injury Scale (QOLIBRI) is one of them. The Quality of Life after Brain Injury-Overall Scale (QOLIBRIOS) is a shorter form of the main scale that was established to assess individuals' levels of contentment with their subjective health status and HRQOL following traumatic brain injury **(1).**

Throughout hospitalization, in which cases they have a highly structured schedule, they can encounter certain problems in the execution of daily tasks. On the other hand, when this structure is absent after a case has been discharged from the hospital, the case may also start to have additional challenges related to executive functioning, behavioral problems, and adjusting to their environment (6).

This research aimed to assess the outcome of health-related quality of life in adults following burn injuries.

Materials and Methods

This systematic review has been performed on five studies. The statement known as PRISMA, which is an abbreviation that stands for Preferred Reporting Items for Systematic Reviews and Meta-analyses, has been considered during the reporting process. Key parameters analyzed included TBI, health-related quality of life, and burn injuries.

Search Strategy

The research aimed to measure the outcome of QOLIBRI injuries by searching electronic sources such as PubMed, Web of Science, and the Cochrane Library. The search results' titles and abstracts were each reviewed separately by two reviewers. The inclusion criteria were assessed against the resulting studies after the removal of duplicate articles. The full texts of all studies that were possibly relevant have been attained for evaluation against the specified inclusion criteria. The results were synthesized only after the investigations that met the criteria were further evaluated. The reference list of the articles that were included was evaluated to determine whether any investigations met the inclusion criteria. We excluded case series, case reports, letters, conference abstracts, editorials, and in vitro investigations.

Risk of Bias Assessment

The Cochrane Risk of Bias assessment tool 1 (ROB 1), which has been developed particularly for interventional research, has been utilized to evaluate the quality of the trial. Detection bias, attrition bias, performance bias, reporting bias, selection bias, and prospective sources of bias are all included in this evaluation instrument. The level of bias in each trial was analyzed, and the researchers classified it as "high," "low," or "unclear" for each parameter under consideration.

Results

Search Results and Selection Criteria

By searching PubMed, Ovid, Web of Science, the Cochrane Library, and other databases, we found 512 studies in our initial search; about 315 duplicate studies were removed, 197 studies have been screened for abstract and title, 30 have been screened for full-text eligibility, and finally, about five investigations have been involved in our systematic review and meta-analysis. Figure 1: Represents the PRISMA flow chart for the process of research selection.

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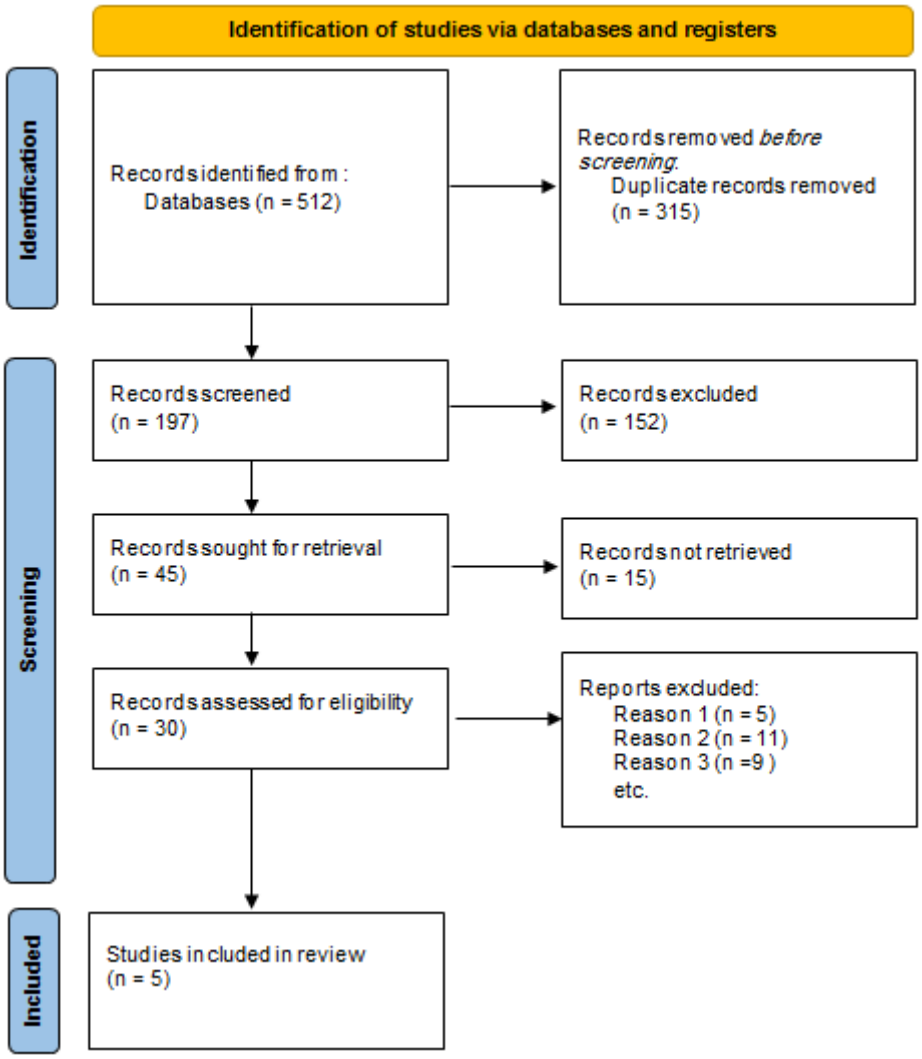

Figure 1. PRISMA Flow Chart for Our Involved Research.

Study characteristics of validated investigations of HRQL instruments in cases with a traumatic brain injury:

The sample sizes of the investigations that have been involved exhibited wide variability, ranging from 33 to 573 people, with the majority including fewer than 200 participants [see Table 1]. Among the five investigations incorporated in our systematic review, two were multicenter with extensive geographical distribution. The age of our participants varied from 4 to 93 years. The demographics of the investigations considered are provided in Table 1.

Table 1. Characteristics of Our Involved Investigations.

Study ID	HRQL instrument	Country	Sample size	Gender	Age
Chiu, (7)	WHOQOL -BREF	Taiwan	199	M: 64%	45

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Teasdale, (8)	EBIQ	Belgium, Finland, France, Italy, Netherlands, UK, USA, Australia, and Germany	258	M: 72%	16 to 93
Thomas-Stonell, (9)	CHQ	Canada	33	M: 67%	4 to 18
Von Steinbuechel, (10)	QOLIBRI	Belgium, Finland, France, Italy, Netherlands, UK, USA, Australia, and Germany	573	M: 72%	39
Von Steinbuechel, (11)	QOLIBRI-OS	Germany	153	M: 67%	39

Methodological Quality Per Measurement Property in Our Five Validation Investigations:

The quality of our included studies ranged from good to fair quality; most of our studies were excellent Quality regarding the internal consistency domain. For more details about ROB of our five studies, see Table 2.

Table 2. ROB Of Our Included Investigations.

Authors, year, reference	Instrument	Internal consistency	Reliability	Content validity	Structural validity	Validity-Hypotheses testing	Interpretation
Chiu, (7)	WHOQOL BREF	Excellent	Good	Good	unclear	Excellent	Good
Teasdale, (8)	EBIQ	Excellent	Fair	unclear	unclear	unclear	unclear
Thomas-Stonell, (9)	CHQ	unclear	unclear	unclear	unclear	Fair	unclear
Von Steinbuechel, (10)	QOLIBRI	unclear	unclear	Excellent	unclear	Good	unclear
Von Steinbuechel, (11)	QOLIBRI-OS	Excellent	unclear	Excellent	Excellent	Good	Fair

Outcomes

Overall Quality of Life and General Health (QOL)

Our meta-analysis for QOL after traumatic brain injury was assessed in three studies totaling 385 patients; our pooled MD and 95% CI were 29.07 [16.03, 42.12]. Major heterogeneity was detected among our pooled studies for this outcome with chi-p < 0.001 and I^2 100%. Figure 2 depicts a forest plot for this outcome.

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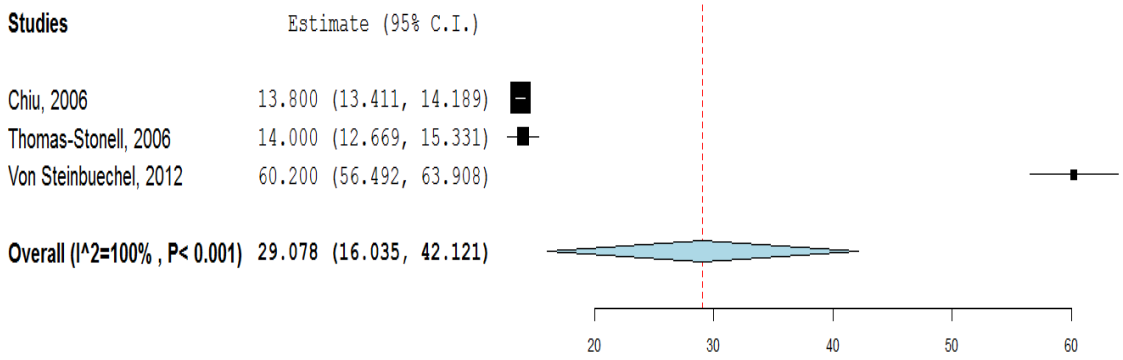

Figure 2: Forest Plot for Overall Quality of Life and General Health

Some *WHOQOL-BREF domains (*social relations, psychological well-being, and physical capacity): Our meta-analysis for psychological well-being, physical capacity, and social relations after traumatic brain injury was assessed in 199 patients; our pooled MD and 95% CIs were 15.1 [14.7, 15.4], 13.9 [13.5, 14.], and 14.2 [13.8, 14.5] for physical capacity, psychological well-being, and social relations, respectively. Major heterogeneity was detected among our pooled studies for this outcome with chi-p < 0.00001 and I2 91%. **Figure 3** depicts forest plot for this outcome.

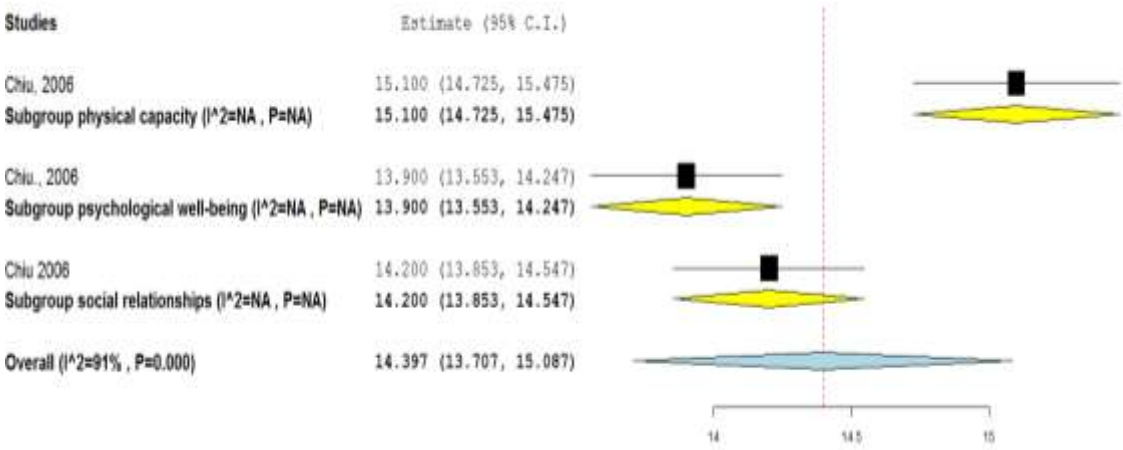

Figure 3: Forest Plot for Some *WHOQOL-BREF Domains.*

Hospital Anxiety and Depression (HADS scale)

Our meta-analysis for the HADS scale after traumatic brain injury was assessed in three studies totaling 984 patients; our pooled MD and 95% CI were 4.78 [1.57, 7.99]. Major heterogeneity was detected among our pooled studies for this outcome with chi-p < 0.001 and I^2 100%. Figure 4 depicts a forest plot for this outcome.

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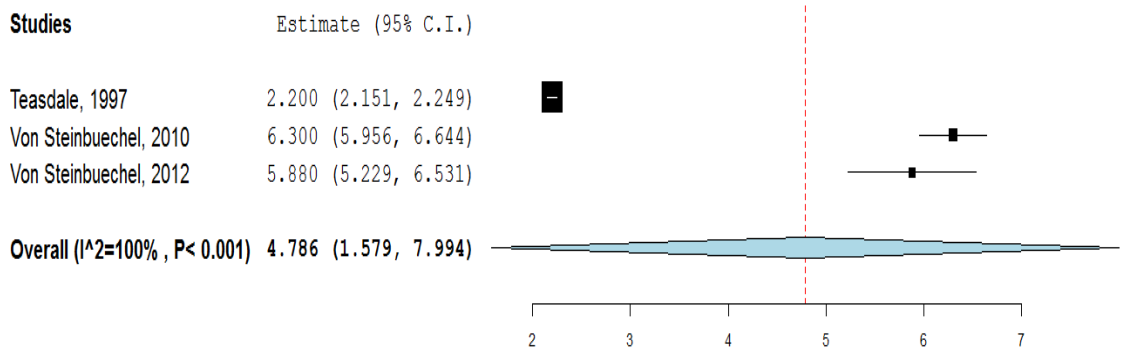

Figure 4. Forest Plot for HADS Scale

Discussion

Five investigations have been involved in our systematic review and meta-analysis. Chiu WT et al. (7), Teasdale TW et al. (8), Thomas-Stonell N et al. (9), von Steinbüchel N et al. (10), and von Steinbuechel N et al. (11) found that the age for our participants ranged from 4 to 93 years old.

Suzuki M et al. (12) study the QOLIBRI; they reported that the average age of participant was 41.77 years.

Groswasser Z et al. (13) study the Quality of Life after Brain Injury questionnaire in cases following traumatic brain injury in Israel. They revealed that the ages of patients ranged from 18 to 68 years.

Methodological Quality

Our included studies varied from good to fair quality; most of our investigations were excellent quality regarding the internal consistency domain.

Suzuki M et al. (1) studied QOLIBRIOS in Japanese; they showed that analyses of the psychometric properties indicated good to excellent characteristics and recommended having high internal consistency.

Suzuki M et al. (12) examine the Quality of Life after Brain Injury scale. The skewness and kurtosis values of the QOLIBRI item features were psychometrically adequate to exceptional. HRQOL is elevated due to their survival of a life-threatening situation.

Groswasser Z et al. (13) demonstrated that the internal consistency of the QOLIBRI subscales with the QOLIBRI Total scale was elevated.

Outcomes

Our meta-analysis for overall QOL and general health following traumatic brain injury was assessed in three studies (Chiu WT et al., 7; Thomas-Stonell N et al., 9; von Steinbüchel N et al., 10), totaling 385 patients. Major heterogeneity was detected with p value <0.001.

A potential contribution to quality control in short-term and long-term care, medical decision-making, and rehabilitation planning might be made by results measures that evaluate the HRQoL that is particular to traumatic brain injury. In clinical rehabilitation, it aids in identifying and setting suitable therapeutic objectives. A problem is in incorporating individualization into an evaluation that maintains simplicity and broad application. Kiwanuka O et al. (14).

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Also, accordance with von Steinbuechel N et al., (15) revealed that significant and clinically concerning a single result domain after traumatic brain injury. Spearman correlations investigated the strength of correlations among the result domains.

Some WHOQOL-BREF domains (*psychological well-being, social relations, and physical capacity):*

Our meta-analysis for psychological well-being, social relations and physical capacity after traumatic brain injury was assessed in 199 patients for physical capacity, psychological well-being, and social relations, respectively. Major heterogeneity was detected with a p-value <0.00001.

This variation was statistically significant, meaning that the differences observed are not due to random chance. This suggests that the impact of TBI on patients can vary greatly, and this variability should be considered when planning treatments or rehabilitation, as personalized care may be necessary to address the individual needs of each patient. The result highlights that TBI's effects on physical, psychological, and social well-being are complex and can differ from person to person.

Salas CE et al. (5) investigate the correlation among network size, functional support, loneliness, and mental health. They demonstrated the correlation among structural, functional, and subjective elements of social isolation and investigated their association with mental health results. The ABI group had marginally elevated levels of loneliness and despair, including worse quality of life and emotional well-being.

Following a brain injury, people may experience a decline in well-being and QOL. Haley WE et al. (16).

Hospital Anxiety and Depression (HADS scale):

Our meta-analysis for the HADS scale after traumatic brain injury was assessed in three studies (Teasdale TW et al., 8; von Steinbüchel N et al., 10; and von Steinbuechel N et al., 11), totaling 984 patients. Major heterogeneity was detected for this outcome with a p-value < 0.001.

The negative associations with the hospital anxiety and depression corroborate previous results that diminished TBI-specific HRQOL correlates with elevated levels of depressed and anxious symptoms (von Steinbüchel N et al., (10) & von Steinbuechel N et al., (11).

depression and anxiety exhibited medium to strong negative associations with all QOLIBRI subscales and the overall score. Suzuki M et al., 12.

It has been discovered by Groswasser Z et al. (13) that the mean score of anxiety in the hospital anxiety and depression was 9.6 in the Israeli research, whereas it was only 5.6 in the QTF validation research, suggesting that the pathology was reduced. Additionally, the mean score of depression in the hospital anxiety and depression was 9.5 in the Israeli research, in comparison with 5.9 in the international research.

Hospital Anxiety and Depression Scales are an instrument frequently unutilized in the rehabilitation and research phases of traumatic brain injury. However, these scales have not been validated for cases who have TBI. Dahm J et al. (17).

Conclusion

This systematic review and meta-analysis on health-related quality of life following traumatic brain injury highlighted the diverse age range of participants and the variation in the quality of the involved investigations. Most studies demonstrated strong internal consistency. The analysis of overall QOL and general health revealed significant variability across studies, as did the assessment of psychological well-being, social relations, and physical capacity. Additionally, the Hospital Anxiety and Depression Scale (HADS) also showed considerable heterogeneity across the studies. These findings underscore the challenges in measuring the influence of TBI on health-related QOL and suggest the need for further research to standardize methods and instruments for more consistent and reliable outcomes.

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References

Suzuki M, Wu YJ, Ota K, von Wild KRH, Naito M, Maeda A, et al. Quality of life after brain injury-overall scale, Japanese version: assessment of reliability and validity. Brain Inj. 2024;38(4):260–6.

Stojanovski S, Scratch SE, Dunkley BT, Schachar R, Wheeler AL. A systematic scoping review of new attention problems following traumatic brain injury in children. Front Neurol. 2021;12:751736.

Rauchman SH, Albert J, Pinkhasov A, Reiss AB. Mild-to-moderate traumatic brain injury: a review with focus on the visual system. Neurol Int. 2022;14(2):453–70.

Budd MA, Gater Jr DR, Channell I. Psychosocial consequences of spinal cord injury: a narrative review. J Pers Med. 2022;12(7):1178.

Salas CE, Rojas-Líbano D, Castro O, Cruces R, Evans J, Radovic D, et al. Social isolation after acquired brain injury: Exploring the relationship between network size, functional support, loneliness and mental health. Neuropsychol Rehabil. 2022;32(9):2294–318.

]Højbjerg K, Poulsen I, Egerod I. Facilitators and inhibitors of traumatic brain injury transfers: A fieldwork investigation. Nurs Open. 2023;10(9):6282–90.

]Chiu WT, Huang SJ, Hwang HF, Tsauo JY, Chen CF, Tsai SH, et al. Use of the WHOQOL-BREF for evaluating persons with traumatic brain injury. J Neurotrauma. 2006;23(11):1609–20.

]Teasdale TW, Christensen AL, Willmes K, Deloche G, Braga L, Stachowiak F, et al. Subjective experience in brain injured patients and their close relatives: A European Brain Injury Questionnaire study. Brain Inj. 1997;11(8):543–64.

Thomas-Stonell N, Johnson P, Rumney P, Wright V, Oddson B. An evaluation of the responsiveness of a comprehensive set of outcome measures for children and adolescents with traumatic brain injuries. Pediatr Rehabil. 2006;9(1):14–23.

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. J Neurotrauma. 2010;27(7):1157–65.

von Steinbuechel N, Wilson L, Gibbons H, Muehlan H, Schmidt H, Schmidt S, et al. QOLIBRI overall scale: a brief index of health-related quality of life after traumatic brain injury. J Neurol Neurosurg Psychiatry. 2012;83(11):1041–7.

Suzuki M, Naito M, Ota K, von Wild KRH, Saitoh E, Kondo I. Validation of the Japanese version of the Quality of Life after Brain Injury (QOLIBRI) scale. Brain & Neurorehabilitation. 2019;12(2).

Groswasser Z, Peled I, Ross S, Truelle JL, Von Steinbüchel N. Validation of the QOLIBRI–Quality of Life after Brain Injury questionnaire in patients after TBI in Israel. Brain Inj. 2018;32(7):879–88.

Kiwanuka O, Lassarén P, Thelin EP, Hånell A, Sandblom G, Fagerdahl A, et al. Long-term health-related quality of life after trauma with and without traumatic brain injury: a prospective cohort study. Sci Rep. 2023;13(1):2986.

von Steinbuechel N, Rauen K, Covic A, Krenz U, Bockhop F, Mueller I, et al. Sensitivity of outcome instruments in a priori selected patient groups after traumatic brain injury: Results from the CENTER-TBI study. PLoS One. 2023;18(4):e0280796.

Haley WE, Roth DL, Kissela B, Perkins M, Howard G. Quality of life after stroke: a prospective longitudinal study. Qual Life Res. 2011;20:799–806.

Dahm J, Wong D, Ponsford J. Validity of the Depression Anxiety Stress Scales in assessing depression and anxiety following traumatic brain injury. J Affect Disord. 2013;151(1):392–6.