

# Longitudinal Changes in the Health-Related Quality of Life During the First Year After Traumatic Brain Injury

Mau-Roung Lin, PhD, Wen-Ta Chiu, MD, PhD, Yi-Ju Chen, MS, Wen-Yu Yu, MD, Sheng-Jean Huang, MD, Ming-Dar Tsai, MD

**ABSTRACT.** Lin M-R, Chiu W-T, Chen Y-J, Yu W-Y, Huang S-J, Tsai M-D. Longitudinal changes in the health-related quality of life during the first year after traumatic brain injury. *Arch Phys Med Rehabil* 2010;91:474-80.

**Objective:** To track the health-related quality of life (HRQL) at discharge and at 6 and 12 months after a traumatic brain injury (TBI) and examine factors associated with changes in each HRQL domain.

**Design:** Longitudinal cohort study.

**Setting:** Using codes of the *International Classification of Diseases*, eligible participants who had a newly diagnosed TBI were identified from discharge records of 4 hospitals in northern Taiwan. Information on the HRQL and injury-related characteristics at the initial and 2 follow-up assessments was collected by extracting medical records and conducting telephone interviews.

**Participants:** Subjects (N=158) participated in the initial assessment, and 147 and 146, respectively, completed the follow-up assessments at 6 and 12 months after injury.

**Interventions:** Not applicable.

**Main Outcome Measure:** The brief version of the World Health Organization Quality of Life (WHOQOL-BREF) with 4 domains of physical capacity, psychologic well being, social relationships, and environment.

**Results:** Scores on all WHOQOL-BREF domains except social relationships greatly improved over the first 6 months and showed continued improvement at 12 months after injury. The domain scores of the WHOQOL-BREF at discharge were significantly associated with the preinjury HRQL level, marital status, alcohol consumption at the time of injury, Glasgow Outcome Scale (GOS) level, cognition, activities of daily living, social support, and depressive status. However, after adjusting for these baseline differences, only the GOS level and depressive status significantly influenced longitudinal changes in the psychologic and social domains over the 12-month period. Changes in the physical and environmental domains were not significantly associated with any characteristics of the study.

**Conclusions:** During the first year after a TBI, the magnitude of HRQL recovery differed across different HRQL domains. Many factors may have significant associations with the initial domain scores of HRQL after TBI; however, only a few factors can significantly influence longitudinal changes in the HRQL.

**Key Words:** Depression; Quality of life; Rehabilitation; Social support; Taiwan.

© 2010 by the American Congress of Rehabilitation Medicine

**T**RAUMATIC BRAIN INJURY is a leading cause of mortality, morbidity, and disability in the world.<sup>1,2</sup> In the United States, an average of 1.4 million TBIs occur each year, among which 50,000 people die, 235,000 are hospitalized, and 1.1 million are treated and released from emergency departments.<sup>2</sup> In Taiwan, 52,000 TBIs are estimated to occur each year, and more than 75% of these patients survive the injury.<sup>3</sup> However, TBI survivors often sustain lifelong physical, cognitive, and/or behavioral disabilities and face negative consequences to multiple aspects of their health.<sup>4</sup>

The HRQL assesses the multidimensional construct of health from the patient's viewpoint.<sup>5,6</sup> HRQL measures are accordingly appropriate for characterizing the impact of the multiple consequences after a TBI, and they complement traditional objective measures such as mortality, signs and symptoms (eg, headaches), physiologic parameters (eg, blood pressure), and functional outcomes (eg, cognition). The WHO developed a brief, cross-cultural version of the WHO's Quality of Life questionnaire (ie, the WHOQOL-BREF).<sup>7</sup> The WHOQOL-BREF has 4 domains of physical capacity, psychologic well being, social relationships, and environment, and it has been validated as an appropriate HRQL instrument for persons with a TBI.<sup>8</sup>

We conducted a longitudinal study in Taiwan to track score changes in each domain of the WHOQOL-BREF in persons with TBI over a 1-year period and examined potential factors associated with changes in each WHOQOL-BREF domain. Information on the change in each domain of the HRQL after a TBI and factors influencing longitudinal changes in these domains is very limited, despite numerous existing cross-

From the Institute of Injury Prevention and Control, College of Public Health and Nutrition (Lin, Chiu) and the Department of Neurosurgery, Shuang Ho Hospital (Chiu), Taipei Medical University; the Department of Nursing, Cathay General Hospital (Chen); the Department of Emergency Medicine, Taipei Medical University Hospital (Yu); the Department of Surgery, National Taiwan University Hospital (Huang); and the Department of Neurosurgery, Shin Kong Wu Ho-Su Memorial Hospital (Tsai), Taipei, Taiwan.

Supported by the National Science Council (grant no. NSC97-2314-B-038-012-MY3) and the National Health Research Institute (grant no. 98TMU-SHH-07), Taiwan, ROC.

No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit on the authors or on any organization with which the authors are associated.

Reprint requests to Wen-Ta Chiu, MD, PhD, Institute of Injury Prevention and Control, Taipei Medical University, 250 Wu-Hsing Street, Taipei 110-31, Taiwan, ROC, e-mail: [wchiu@tmu.edu.tw](mailto:wchiu@tmu.edu.tw).

0003-9993/10/9103-00736\$36.00/0  
doi:10.1016/j.apmr.2009.10.031

## List of Abbreviations

ADLs	activities of daily living
CI	confidence interval
GCS	Glasgow Coma Scale
GOS	Glasgow Outcome Scale
HRQL	health-related quality of life
TBI	traumatic brain injury
WHO	World Health Organization
WHOQOL-BREF	brief version of the World Health Organization Quality of Life

sectional data in which only a single response is available for each person.<sup>9-13</sup> There are several reasons why longitudinal data of HRQL from persons with a TBI are important. First, although the recovery process from a TBI involving acute trauma and pain, cognition (eg, an altered level of consciousness and memory deficits), neuromuscular functions (eg, sensory and motor control deficits), behavioral changes (eg, emotional disinhibition and depression), and communication (eg, aphasia and impaired language skills) is well understood,<sup>14</sup> changes in the HRQL might not simply be congruent with those trajectories, and magnitudes of HRQL changes may differ across the various HRQL domains. Second, clinicians often underestimate the impact of psychologic aspects and overemphasize the importance of physical symptoms and signs among patients<sup>15,16</sup>; thus, information on the HRQL from a patient's viewpoint can more precisely reflect the long-term health care needs among persons with a TBI as well as actually determine the success of health care programs.<sup>17</sup> Third, while many cross-sectional studies have reported no significant differences in the HRQL across TBI severity levels,<sup>8-10,12,18</sup> whether changes in the HRQL are affected by TBI severity or other injury-related characteristics remains unexplored. Finally, the potential influence of the HRQL before injury on relationships of the HRQL after a TBI with these injury characteristics needs to be determined as well.

**METHODS**

**Study Participants and Procedures**

During a 7-month period from April to October 2006, four teaching hospitals in Taipei City, Taiwan—National Taiwan University Hospital, Wan Fang Hospital, Shin Kong Wu Ho-Su Memorial Hospital, and Taipei Medical University Hospital—were selected to recruit participants. Eligible participants who had a newly diagnosed TBI were identified monthly by the presence among the discharge diagnoses of any of the following codes of the *International Classification of Diseases-9th Revision*: 800 to 801.9 (fractures of the vault and base of the skull), 803 to 804.9 (other skull fractures), and 850 to 854.9 (concussion and brain contusion and hemorrhage). In total, 202 eligible participants were identified.

Information on the phone number, age, sex, educational level, religion (yes/no), time and cause of injury, alcohol consumed immediately before the TBI (yes/no), posttraumatic amnesia (yes/no), GCS score at admission, and GOS score at discharge was extracted from hospital records. The phone number was used to conduct subsequent telephone interviews. The GCS scores were originally computed as the sum of the coded values for 3 behavioral responses: eye opening, verbal performance, and motor response, with scores of 3 to 8, 9 to 13, and 14 to 15 indicating severe, moderate, and mild injuries, respectively.<sup>19</sup> The GOS is a 5-point scale: death, vegetative state, severe disability, moderate disability, and good recovery.<sup>20</sup>

Approximately 1 week prior to the initial and 2 follow-up assessments, researchers contacted eligible participants by telephone to set up a 30-minute session for data collection. At the initial assessment soon after hospital discharge, telephone interviews were also conducted to collect information on marital status, employment, cognition, independence in ADLs, social support, depressive symptoms, and the HRQL (as assessed by the WHOQOL-BREF). Furthermore, the HRQL at preinjury was also retrospectively assessed; under each item of the WHOQOL-BREF, both current and preinjury HRQL data were collected. Interview procedures and attitudes were standardized through participation in a 4-hour training course. Among eli-

gible participants, 158 were interviewed, 12 had died, 5 survived in a vegetative state, 8 declined to be interviewed, and we had incorrect phone numbers for 19.

At 6 and 12 months after injury, 147 and 146 participants, respectively, completed the 2 follow-up assessments of the WHOQOL-BREF and time-dependent variables such as cognitive status, ADLs, social support, and depressive status. This research was approved by the institutional review board of Taipei Medical University, Taipei, Taiwan, with informed consent obtained from all participants.

Compared with the participants, the 44 nonparticipants had more severe TBIs with a lower mean GCS score (13.4 vs 11.0 points;  $P=.003$ ); however, no significant differences were detected in other characteristics such as the age at injury, sex, educational level, marital status, religion, employment, and injury cause.

**WHOQOL-BREF**

The WHOQOL-BREF contains 26 items: 2 items from the overall quality of life and general health facet (Q1 and Q2) and 1 item from each of the remaining 24 health-related facets (Q3–Q26).<sup>7</sup> As shown in table 1, the 24 facets or items are further categorized into 4 domains: physical capacity (7 items), psychologic well being (6 items), social relationships (3 items), and environment (8 items). The Taiwanese version of the WHOQOL-BREF was developed in compliance with WHO guidelines on procedures for translation as well as the design and selection of appropriate items.<sup>21</sup> It includes 26 items translated from the standard WHOQOL-BREF with 2 additional

**Table 1: Domains and Items of the WHOQOL-BREF**

Domain	Item
Physical capacity	Q3. Pain and discomfort
	Q4. Dependence on medication or treatment
	Q10. Energy and fatigue
	Q15. Mobility
	Q16. Sleep and rest
	Q17. Activities of daily living
	Q18. Working capacity
	Q26. Negative feelings
Psychologic well being	Q5. Enjoyment of life
	Q6. Spirituality, religion, and personal beliefs
	Q7. Thinking, learning, memory, and concentration
	Q11. Body image and appearance
	Q19. Self-satisfaction
	Q20. Personal relationships
Social relationships	Q21. Sexual activity
	Q22. Friends' support
	Q27. Being respected
Environment	Q8. Physical safety and security
	Q9. Physical environment
	Q12. Financial environment
	Q13. Opportunities
	Q14. Participation and support of leisure activities
	Q23. Home environment
	Q24. Health and social care: availability and quality
	Q25. Transportation
Q28. Food availability	

Download English Version:

<https://daneshyari.com/en/article/3449228>

Download Persian Version:

<https://daneshyari.com/article/3449228>

[Daneshyari.com](https://daneshyari.com)