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Mental health-related quality of life in caregivers of patients with acquired brain injury: the central role of depressive symptoms

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Abstract: Objective: To assess health-related quality of life and psychological symptoms in family caregivers of patients with severe chronic acquired brain injury, and to determine the independent contribution of prolonged grief to mental health-related quality of life beyond depressive and anxiety symptoms. Methods: In this cross-sectional study, 50 primary family caregivers completed standardized measures of depression (BDI-II), anxiety (BAI), prolonged grief (PG-12), and health-related quality of life (SF-12). Associations between variables were analysed using Pearson correlations and hierarchical multiple linear regression. Results: Forty-eight percent of caregivers presented clinically significant depressive symptoms, 26% clinically significant anxiety symptoms, and 34% met criteria for prolonged grief. Mental health-related quality of life was markedly reduced (MCS = 39.86; SD = 10.08), whereas physical health-related quality of life remained within normative ranges (PCS = 51.21; SD = 8.52). Depressive symptoms, anxiety symptoms, and prolonged grief were negatively associated with mental health-related quality of life, with depression showing the strongest correlation ($r = -0.709$; $p < 0.001$). In the regression models, only depressive symptoms independently predicted mental health-related quality of life ($\beta = -0.649$; $p < 0.001$), explaining 52.5% of the variance ($R^2 = 0.525$), whereas anxiety and prolonged grief did not show independent effects. Conclusions: Caregivers experience high levels of psychological distress and significantly impaired mental health-related quality of life, with depressive symptoms representing the main factor associated with this impairment, highlighting the importance of their systematic detection and targeted intervention in long-term care settings for patients with severe acquired brain injury.

Keywords: Caregivers, acquired brain injury, depression, quality of life, prolonged grief, mental health.

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ESP Calidad de vida relacionada con la salud mental en cuidadores de pacientes con daño cerebral adquirido: el papel central de los síntomas depresivos

ESP **Resumen:** Objetivo: Evaluar la calidad de vida relacionada con la salud y los síntomas psicológicos en cuidadores familiares de pacientes con daño cerebral adquirido crónico grave, así como determinar la contribución independiente del duelo prolongado a la calidad de vida relacionada con la salud mental más allá de los síntomas de depresión y ansiedad. Métodos: En este estudio transversal participaron 50 cuidadores familiares principales que completaron medidas estandarizadas de depresión (BDI-II), ansiedad (BAI), duelo prolongado (PG-12) y calidad de vida relacionada con la salud (SF-12). Las asociaciones entre variables se analizaron mediante correlaciones de Pearson y regresión lineal múltiple jerárquica. Resultados: El 48% de los cuidadores presentó síntomas depresivos clínicamente significativos, el 26% síntomas de ansiedad y el 34% cumplía criterios de duelo prolongado. La calidad de vida relacionada con la salud mental fue significativamente baja (MCS = 39,86; DT = 10,08), mientras que la física se mantuvo en rangos normativos (PCS = 51,21; DT = 8,52). Los síntomas depresivos, de ansiedad y el duelo prolongado se asociaron negativamente con la calidad de vida mental, siendo la depresión la variable con mayor correlación ($r = -0{,}709$; $p < 0{,}001$). En los modelos de regresión, solo los síntomas depresivos predijeron de forma independiente la calidad de vida mental ($\beta = -0{,}649$; $p < 0{,}001$), explicando un 52,5% de la varianza ($R^2 = 0{,}525$), mientras que la ansiedad y el duelo prolongado no mostraron efectos independientes. Conclusiones: Los cuidadores presentan elevados niveles de malestar psicológico y un deterioro significativo de la calidad de vida relacionada con la salud mental, siendo los síntomas depresivos el principal factor asociado a este deterioro, lo que subraya la importancia de su detección e intervención prioritaria en contextos de atención a pacientes con daño cerebral adquirido grave.

Palabras clave: Cuidadores familiares, daño cerebral adquirido, depresión, calidad de vida, duelo prolongado, salud mental.

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1. Introduction

Acquired brain injury (ABI) is one of the leading causes of severe disability worldwide and may result, in a substantial proportion of cases, in prolonged disorders of consciousness (DoC), such as unresponsive wakefulness syndrome (UWS) and minimally conscious state (MCS). These conditions are characterized by a dissociation between partial preservation of autonomic functions and the absence or severe limitation of behaviours indicating awareness, often with a slow, uncertain, and chronic clinical course. Patients may remain in these states for months or even years and frequently require long-term medical care and assistance with basic daily activities, posing major clinical, ethical, and social challenges for healthcare systems and families(1–4).

Advances in intensive care and post-acute care have increased survival after severe brain injury, resulting in a growing number of patients living with prolonged disorders of consciousness. Consequently, family members often assume long-term caregiving roles, providing practical, emotional, and organizational support for their relatives. Caregiving responsibilities may involve coordinating medical care, participating in treatment decisions, and coping with the uncertainty surrounding prognosis and recovery(5).

Previous research indicates that caregiving in this context can profoundly affect the psychological well-being and quality of life of family members. Caregivers of patients with severe brain injury frequently report symptoms of depression, anxiety, chronic stress, and sleep disturbances, as well as social isolation and financial strain associated with long-term caregiving responsibilities (6–8). In addition to emotional difficulties, caregivers often experience disruptions in family functioning, work life, and social relationships, which may further contribute to reduced quality of life and increased caregiver burden(9).

Several studies have shown that caregivers of patients with prolonged disorders of consciousness report significant levels of psychological distress and multiple unmet needs, particularly regarding access to medical information, emotional support, and professional guidance(10). These caregiving demands may also affect caregivers' expectations regarding recovery and their understanding of the patient's clinical condition. Indeed, previous research suggests that family members' perceptions of the patient's level of consciousness do not always correspond with clinical diagnoses, which may increase emotional distress and complicate communication between families and healthcare professionals(11).

Within this context, the theoretical framework of ambiguous loss provides a useful perspective for understanding the psychological experience of families of patients with prolonged disorders of consciousness. Ambiguous loss refers to situations in which a loved one is physically present but psychologically absent, generating a persistent experience of loss without closure (12). Families of patients with severe brain injury frequently experience this form of loss, as their relatives remain alive but with profoundly altered cognitive and relational capacities. This situation may contribute to chronic emotional distress, difficulties in psychological adaptation, and experiences of disenfranchised grief(13,14).

In recent years, increasing attention has been given to grief-related reactions among caregivers of patients with severe brain injury. Studies have reported that caregivers of patients in vegetative or minimally conscious states may experience prolonged grief reactions and depressive symptoms associated with the chronic uncertainty surrounding the patient's condition(15,16). These emotional responses may coexist with other forms of psychological distress, particularly depression and anxiety, and may significantly affect caregivers' mental health-related quality of life.

To our knowledge, few studies have examined the relative contribution of prolonged grief, depression, and anxiety to health-related quality of life in caregivers of patients with prolonged disorders of consciousness. In particular, the role of prolonged grief symptoms in this population has received comparatively limited empirical attention. While prolonged grief disorder has been extensively studied in the context of bereavement following death, fewer studies have examined grief reactions in situations of ambiguous loss such as prolonged disorders of consciousness(17). Moreover, it remains unclear whether prolonged grief symptoms independently contribute to impaired mental health-related quality of life in caregivers, or whether their effects are largely explained by co-occurring depressive and anxiety symptoms.

Clarifying the relative contribution of depression, anxiety, and prolonged grief to caregivers' quality of life may provide clinically relevant information for the development of screening strategies and targeted psychological interventions in long-term care settings for patients with disorders of consciousness. Understanding which psychological factors most strongly influence caregivers' well-being may also help clinicians design more effective support programs for families facing long-term disorders of consciousness.

Therefore, the aim of the present study was to assess health-related quality of life and levels of depression, anxiety, and prolonged grief symptoms in family caregivers of patients with severe chronic acquired brain injury and prolonged disorders of consciousness, and to examine the relative contribution of these variables to the mental component of health-related quality of life. We hypothesised that caregivers would present moderate to high levels of depressive symptoms, anxiety, and prolonged grief, together with reduced mental health-related quality of life. We further hypothesised that depressive symptoms, anxiety, and prolonged grief would be significantly intercorrelated and negatively associated with mental health-related quality of life, and that depressive symptoms would show the strongest independent association with impairment in mental health-related quality of life.

2. Method

Study design

A cross-sectional, observational, and correlational study was conducted to assess symptoms of prolonged grief, depression, anxiety, and health-related quality of life in family caregivers of patients with severe chronic acquired brain injury and prolonged disorders of consciousness.

Participants

The sample consisted of 50 primary caregivers of patients admitted to the Severe Chronic Brain Injury Unit of Fundación Instituto San José (Order of Saint John of God), Madrid, Spain. Participants were recruited using consecutive sampling, including all eligible caregivers during the data collection period.

Inclusion criteria were: (a) age ≥ 18 years; (b) being a direct family member and the primary caregiver of the patient; (c) sufficient cognitive ability to understand and complete the assessment instruments; and (d) provision of written informed consent.

Exclusion criteria were: (a) prior diagnosis of a psychotic disorder, bipolar disorder, or other severe psychiatric condition; (b) significant cognitive impairment; (c) previous complicated grief unrelated to the current patient; (d) refusal to participate; and (e) absence of a clearly identified primary caregiver.

All corresponding patients had a clinical diagnosis of unresponsive wakefulness syndrome or minimally conscious state, established by a specialist physician through clinical evaluation and standardised assessment scales.

Sample size

Sample size was determined by the total number of eligible cases available at the unit during the study period, given the low prevalence and high level of specialisation of this clinical population.

In addition, an a priori power analysis was conducted using GPower (versión 3.1)* for a multiple linear regression model including three main predictors (depressive symptoms, anxiety symptoms, and prolonged grief). Assuming a moderate effect size ($f^2 = 0.15$), a significance level of $\alpha = .05$, and statistical power $(1-\beta) = .80$, the required minimum sample size was 48 participants. The final sample of 50 caregivers met this criterion.

Procedure

The study was approved by the Ethics Committee of Universidad Complutense de Madrid. After receiving written and verbal information about the study aims and procedures, participants provided written informed consent.

Caregivers completed a battery of self-report questionnaires individually in a designated room at the hospital. A trained researcher was available to clarify any doubts and ensure proper completion of the instruments. Participation was voluntary, anonymous, and confidential.

Measures

- *Beck Depression Inventory–II (BDI-II).* Depressive symptoms were assessed using the Spanish version of the Beck Depression Inventory–II (BDI-II)(19,20). The BDI-II consists of 21 items evaluating the severity of depressive symptoms during the previous two weeks on a 4-point Likert scale (0–3). The Spanish adaptation has demonstrated high internal consistency and adequate convergent and factorial validity.
- *Beck Anxiety Inventory (BAI).* Anxiety symptoms were assessed using the Spanish version of the Beck Anxiety Inventory (BAI)(21,22). The BAI is a 21-item instrument measuring the severity of anxiety symptoms on a 4-point scale ranging from 0 (not at all) to 3 (severely). The Spanish validation shows good internal consistency and construct validity.

- *Prolonged Grief Disorder Questionnaire–Predeath (PG-12).* Symptoms of prolonged grief were assessed using the Prolonged Grief Disorder Questionnaire–Predeath (PG-12)(17), adapted for use in anticipatory or ambiguous loss contexts. Previous studies have reported adequate internal consistency and construct validity of this measure in caregivers of patients with disorders of consciousness(15,16).
- *Short Form Health Survey–12 (SF-12).* Health-related quality of life was assessed using the Spanish version of the 12-item Short Form Health Survey (SF-12)(23–25). The SF-12 yields two summary indices: the Physical Component Summary (PCS) and the Mental Component Summary (MCS). The Spanish version has demonstrated adequate reliability and validity in both general and clinical populations.
- *Semi-structured interview.* An ad hoc semi-structured interview was developed to collect information regarding caregivers' perceptions of the patient's level of awareness, expectations of recovery, perceived patient suffering, attitudes towards death, and the role of spiritual beliefs as coping resources.

Statistical analysis

Statistical analyses were conducted using IBM SPSS Statistics, version 30.0 (IBM Corp., Armonk, NY, USA).

Descriptive statistics (means, standard deviations, frequencies, and percentages) were calculated. Normality of distributions was assessed using skewness, kurtosis, and the Kolmogorov–Smirnov test.

Associations between continuous variables were examined using Pearson correlation coefficients.

To examine the relative contribution of depressive symptoms, anxiety, and prolonged grief to the Mental Component Summary (MCS) of the SF-12, hierarchical multiple linear regression analyses were performed. In the first block, relevant sociodemographic variables were entered. In the second block, depressive and anxiety symptoms were introduced. In the third block, prolonged grief symptoms were added.

Assumptions of normality, linearity, homoscedasticity, and independence of residuals were examined. Multicollinearity was assessed using tolerance and variance inflation factor (VIF) values.

Statistical significance was set at $p < .05$ (two-tailed).

3. Results

Sample characteristics

Sociodemographic and clinical characteristics of caregivers and patients are presented in Table 1.

Table 1. Sociodemographic and clinical characteristics of caregivers and patients (N = 50).

Caregivers

Variable	Value
Age (years), mean (SD)	55.38 (14.23)
Sex, n (%)	
Male	16 (32)
Female	34 (68)
Relationship to patient, n (%)	
Parent	13 (26)
Son/Daughter	10 (20)
Sibling	8 (16)
Partner/Spouse	19 (38)

Variable	Value
Educational level, n (%)	
No formal education	1 (2)
Primary education	5 (10)
Secondary education	16 (32)
Higher education	28 (56)
Employment status, n (%)	
Student	1 (2)
Employed	29 (58)
Homemaker	2 (4)
Retired	12 (24)
Unemployed	6 (12)

Patients

Variable	Value
Age (years), mean (SD)	54.56 (15.75)
Length of stay since injury (days), mean (SD) mean (SD)	1265.44 (1120.41)
Sex, n (%)	
Male	28 (56)
Female	22 (44)
Diagnosis, n (%)	
Unresponsive wakefulness syndrome (UWS)	25 (50)
Minimally conscious state (MCS)	25 (50)
Etiology, n (%)	
Traumatic	6 (12)
Hypoxic–ischemic	22 (44)
Stroke	21 (42)
Other	1 (2)
Time since diagnosis, n (%)	
0–6 months	4 (8)
7–12 months	4 (8)
> 12 months	42 (84)

Depression, anxiety, and prolonged grief symptoms.

Thirty-four percent of caregivers met diagnostic criteria for prolonged grief, and 72% were classified as being at high risk according to the PG-12 (Table 2).

Nearly half of the sample (48%) presented clinically significant levels of depressive symptoms, whereas 26% presented clinically significant anxiety symptoms (Table 2).

Health-related quality of life

Mean scores on the Physical Component Summary (PCS) of the SF-12 were close to normative population values, whereas the Mental Component Summary (MCS) showed clearly reduced scores.

Specifically, the mean MCS score was 39.86, approximately one standard deviation below the normative population mean (mean = 50, SD = 10), indicating a clinically relevant impairment in mental health-related quality of life. The PCS showed a mean value of 51.21, slightly above the normative mean (Table 2).

Table 2. Descriptive statistics of psychological variables and health-related quality of life (N = 50)

Variable	Value
PG-12 total score, mean (SD)	33.82 (9.51)
High risk for PG-12, n (%)	36 (72)
BDI-II total score, mean (SD)	20.90 (10.38)
Clinically significant depression, n (%)*	24 (48)
BAI total score, mean (SD)	13.42 (9.41)
Clinically significant anxiety, n (%)*	13 (26)
SF-12 Physical Component Summary (PCS), mean (SD)	51.21 (8.52)
SF-12 Mental Component Summary (MCS), mean (SD)	39.86 (10.08)

Note. BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory–II; PG-12 = Prolonged Grief Disorder Questionnaire–Predeath; SF-12 MCS = Short Form-12 Mental Component Summary; SF-12 PCS = Short Form-12 Physical Component Summary.

* Clinically significant depression and anxiety were defined as BDI-II and BAI scores ≥ 21

Associations between psychological variables and quality of life

The correlation matrix (Table 3) showed strong positive associations between prolonged grief symptoms and depressive symptoms, and moderate positive associations between prolonged grief symptoms and anxiety symptoms.

Depressive symptoms, anxiety symptoms, and prolonged grief symptoms were all significantly and negatively associated with the MCS of the SF-12.

No relevant associations were observed between psychological variables and the PCS.

Table 3. Pearson correlations between psychological variables and mental and physical health-related quality of life

Variable	PG-12	BDI-II	BAI	SF-12 MCS
BDI-II	.798***			
BAI	.412**	.524***		
SF-12 MCS	–.567***	–.709***	–.472***	
SF-12 PCS	–.241	–.318*	–.226	.402**

Note.
BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory–II; PG-12 = Prolonged Grief Disorder Questionnaire–Predeath; SF-12 MCS = Short Form-12 Mental Component Summary; SF-12 PCS = Short Form-12 Physical Component Summary.

Pearson correlation coefficients are shown.
p < .05; **p** < .01; ***p*** < .001.

Given the strong correlations observed between the psychological variables and the MCS, hierarchical regression analyses were conducted to examine their independent contribution.

Hierarchical multiple regression analysis

In the first block, caregiver age and sex did not explain a significant proportion of variance in the MCS (R^2 = .012, p = .753).

The inclusion of depressive and anxiety symptoms in the second block resulted in a significant increase in explained variance ($\Delta R^2 = .512$, $p < .001$), yielding a total R^2 of .524. In this model, only depressive symptoms emerged as a significant predictor of the MCS ($\beta = -.649$, $p < .001$), whereas anxiety symptoms did not show an independent effect.

In the third block, the addition of prolonged grief symptoms did not produce a significant increase in explained variance ($\Delta R^2 < .001$, $p = .853$). In the final model ($R^2 = .525$), depressive symptoms were the only variable that independently predicted the Mental Component Summary of the SF-12 ($\beta = -.649$, $p < .001$), whereas anxiety and prolonged grief did not show significant independent effects.

Partial correlation

The partial correlation between prolonged grief symptoms and the MCS, controlling for depressive symptoms, was not significant ($r = -.003$), indicating that the association observed in bivariate analyses disappeared when depressive symptoms were taken into account.

Semi-structured interview

Most caregivers reported perceiving some degree of communication or interaction with the patient, as well as recognising or being recognised by their relative.

A high proportion of caregivers considered that the patient experienced suffering and expressed fear regarding the patient's future.

At the same time, more than half of caregivers reported maintaining hope for some degree of recovery, despite acknowledging the irreversibility of the situation.

Caregivers' attitudes towards death and euthanasia, as well as the role of spiritual beliefs as coping resources, are presented in Table 4.

Table 4. Semi-structured interview data (N = 50)

Variable	Yes, n (%)
Fear regarding the patient's future	37 (74)
Fear regarding own future	26 (52)
Acknowledges irreversibility of the condition	37 (74)
Maintains hope for recovery	27 (54)
Believes that care improves the situation	32 (64)
Perceives communication with the patient	43 (86)
Believes the patient looks at them	40 (80)
Believes the patient recognizes them	41 (82)
Believes the patient hears them	39 (78)
Believes the patient suffers	34 (68)
Current wish for patient's death	10 (20)
Future wish for death if condition remains irreversible	7 (14)
Would accept euthanasia	14 (28)
Would wish death if the patient is suffering	30 (60)
Spiritual beliefs are helpful	36 (72)

Note. Values are presented as n (%).

4. Discussion

The present study aimed to examine the association between depressive symptoms, anxiety, and prolonged grief with health-related quality of life in family caregivers of patients with severe chronic acquired brain injury and prolonged disorders of consciousness. Consistent with our hypotheses, caregivers reported considerable psychological distress, with a substantial proportion presenting clinically relevant levels of depressive and anxiety symptoms. Moreover, mental health-related quality of life was markedly reduced, whereas physical health-related quality of life remained within normative ranges. Importantly, depressive symptoms emerged as the main independent predictor of impairment in mental health-related quality of life.

These findings are consistent with previous studies indicating that caregivers of patients with severe brain injury experience significant psychological distress and reduced quality of life. Several studies have reported elevated levels of depression, anxiety, and emotional burden among caregivers of patients with disorders of consciousness or severe traumatic brain injury(6–9). The chronic and uncertain nature of these conditions, combined with the high level of patient dependency, often places caregivers under considerable emotional and practical strain. As a result, caregivers frequently experience long-term psychological consequences that may significantly affect their well-being and daily functioning.

Our findings regarding the central role of depressive symptoms are also consistent with previous research suggesting that depression represents one of the most important determinants of caregivers' mental health outcomes. Earlier studies have reported that depressive symptoms are strongly associated with reduced quality of life and increased caregiver burden in families of patients with acquired brain injury(6,7). Depression may influence multiple aspects of caregivers' functioning, including emotional regulation, coping strategies, and perceptions of caregiving demands, which in turn may negatively affect overall psychological well-being.

The present results also support previous research indicating that caregivers of patients with disorders of consciousness may experience grief-related reactions associated with the ambiguous and prolonged nature of the patient's condition. The concept of ambiguous loss has been proposed as a useful framework to understand the psychological experience of families in these situations, in which the patient is physically present but psychologically absent (12). Previous studies have documented that caregivers frequently experience feelings of unresolved grief, emotional ambivalence, and difficulties adapting to the patient's altered identity and functioning(13,14). In line with this perspective, several studies have reported the presence of prolonged grief symptoms among caregivers of patients in vegetative or minimally conscious states(15,16).

However, although prolonged grief symptoms were associated with poorer mental health-related quality of life in bivariate analyses, the results of the regression analysis indicated that depressive symptoms accounted for most of the explained variance in caregivers' mental health outcomes. This finding suggests that, while grief-related reactions may be present in caregivers, depressive symptoms may play a more central role in determining overall mental health-related quality of life. One possible explanation is that depressive symptoms encompass a broader range of affective and cognitive difficulties that may have a more direct impact on daily functioning and perceived well-being.

Another relevant factor contributing to caregiver distress is the uncertainty surrounding prognosis and the complexity of medical decision-making. Family members frequently assume the role of surrogate decision-makers for patients who are unable to communicate their preferences, which may generate additional emotional strain and ethical dilemmas(11). Previous research has also shown that caregivers' perceptions of the patient's level of consciousness may not always correspond with clinical assessments, potentially contributing to unrealistic expectations or prolonged uncertainty regarding recovery(11).

Taken together, the findings of the present study highlight the importance of systematically assessing the psychological well-being of caregivers of patients with prolonged disorders of consciousness. Given the strong association between depressive symptoms and reduced quality of life observed in this study, screening for depression may be particularly relevant in clinical settings. Early identification of psychological distress may facilitate the implementation of targeted interventions aimed at improving caregivers' coping strategies, emotional adjustment, and overall well-being.

From a clinical perspective, these findings suggest that caregiver support programs in long-term care or specialized units for severe brain injury settings should include psychological assessment and interventions addressing depressive symptoms and emotional distress. Psychoeducational interventions, psychological counselling, and structured support programs may help caregivers better understand the patient's condition, manage uncertainty, and develop adaptive coping strategies. In addition, improving communication between healthcare professionals and family members may contribute to reducing distress and facilitating more realistic expectations regarding recovery and long-term outcomes.

Several limitations of the present study should be acknowledged. First, the cross-sectional design precludes conclusions regarding causal relationships between psychological variables and quality of life. Longitudinal studies would be necessary to examine how depressive symptoms, anxiety, and grief reactions evolve over time and influence caregivers' adjustment to the patient's condition. Second, the sample size was relatively small and drawn from a single clinical center, which may limit the generalizability of the findings. Future studies including larger and more diverse samples would help to better understand the psychological experiences of caregivers in different healthcare contexts.

Despite these limitations, the present study contributes to the growing literature on the psychological impact of caregiving in families of patients with severe brain injury and prolonged disorders of consciousness. By examining the relative contribution of depressive symptoms, anxiety, and prolonged grief to caregivers' quality of life, this study provides evidence that depressive symptoms may represent a key factor underlying impaired mental health-related quality of life in this population.

5. Conclusions

Family caregivers of patients with severe chronic acquired brain injury and prolonged disorders of consciousness experience high levels of psychological distress and markedly impaired mental health-related quality of life.

Depressive symptoms appear to constitute the primary determinant of mental health impairment in this population, whereas prolonged grief, although frequent and clinically relevant, does not independently predict reduced quality of life beyond depression.

These findings underscore the importance of prioritizing systematic detection and treatment of depressive symptoms in caregivers, while addressing grief-related processes as complementary therapeutic targets. The integration of structured psychological support programs for families within long-term care services for severe acquired brain injury may substantially improve caregiver well-being.

6. References

1. Giacino JT, Ashwal S, Childs N, Cranford R, Jennett B, Katz DI, et al. The minimally conscious state: definition and diagnostic criteria. Neurology 2002;58:349-53. https://doi.org/10.1212/WNL.58.3.349
2. Laureys S, Schiff ND. Coma and consciousness: paradigms (re)framed by neuroimaging. Neuroimage 2012;11:826-38. https://doi.org/10.1016/j.neuroimage.2011.12.041
3. Golden K, Bodien YG, Giacino JT. Disorders of consciousness classification and taxonomy. Phys Med Rehabil Clin N Am 2024;35:15-33. https://doi.org/10.1016/j.pmr.2023.06.011
4. Royal College of Physicians. Prolonged disorders of consciousness: national clinical guidelines. London: RCP; 2020.
5. Chinner A, Pauli R, Cruse D. The impact of prolonged disorders of consciousness on family caregivers' quality of life: a scoping review. Neuropsychol Rehabil 2022;32:1643-66. https://doi.org/10.1080/09602011.2021.1922463

6. Mar J, Arrospide A, Begiristain JM, Larrañaga I, Elosegui E, Oliva-Moreno J. Quality of life and burden of caregivers of patients with acquired brain injury. Rev Esp Geriatr Gerontol 2011;25:390-8. https://doi.org/10.1016/j.regg.2011.01.010
7. Norup A, Kristensen KS, Poulsen I, Mortensen EL. Family members of patients with severe traumatic brain injury: emotional distress and caregiver burden. Brain Inj 2015;29:354-60. https://doi.org/10.3109/02699052.2015.1114143
8. Bayen E, Jourdan C, Ghout I, Darnoux E, Azerad S, Vallat-Azouvi C, et al. Objective and subjective burden of informal caregivers 4 years after severe traumatic brain injury: results from the PariS-TBI study. J Head Trauma Rehabil 2013;28:408-18. https://doi.org/10.1097/HTR.0000000000000079
9. Whiffin CJ, Gracey F, Ellis-Hill C. The experience of families following traumatic brain injury: A meta-synthesis of qualitative research. Int J Nurs Stud 2021;123:104043. https://doi.org/10.1016/j.ijnurstu.2021.104043
10. Gosseries O, Schnakers C, Vanhaudenhuyse A, Martial C, Aubinet C, Charland-Verville V, et al. Needs and quality of life of caregivers of patients with prolonged disorders of consciousness. Brain Sci 2023;13:308. https://doi.org/10.3390/brainsci13020308
11. Yan Y, Li M, Annen J, Huang W, Cai T, Wang X, et al. Perception of diagnosis by family caregivers in severe brain injury patients in China. BMC Palliat Care 2024;23:148. https://doi.org/10.1186/s12904-024-01482-8
12. Boss P. Ambiguous loss theory: challenges for scholars and practitioners. Fam Relat 2007;56:105-10. https://doi.org/10.1111/j.1741-3729.2007.00444.x
13. Giovannetti AM, Černiauskaitė M, Leonardi M, Sattin D, Covelli V. Informal caregivers of patients with disorders of consciousness: experience of ambiguous loss. Brain Inj 2015;29:473-80. https://doi.org/10.3109/02699052.2014.990514
14. Thøgersen CMS, Glintborg C. Ambiguous loss and disenfranchised grief among spouses of brain injury survivors. Nord Psychol 2021;74:16-29. https://doi.org/10.1080/19012276.2020.1862699
15. Chiambretto P, Moroni L, Guarnerio C, Bertolotti G, Prigerson HG. Prolonged grief and depression in caregivers of patients in vegetative state. Brain Inj 2010;24:581-8. https://doi.org/10.3109/02699051003610490
16. De la Morena MJ, Cruzado JA. Caregivers of patients with disorders of consciousness: coping and prolonged grief. Acta Neurol Scand 2013;127:413-8. https://doi.org/10.1111/ane.12061
17. Prigerson HG, Horowitz MJ, Jacobs SC, Parkes CM, Aslan M, Goodkin K, et al. Prolonged grief disorder: psychometric validation of criteria proposed for DSM-V and ICD-11. PLoS Med 2009;6:e1000121. https://doi.org/10.1371/journal.pmed.100012
18. World Health Organization. International classification of diseases for mortality and morbidity statistics (ICD-11). Geneva: WHO; 2019.
19. Beck AT, Steer RA, Brown GK. Manual for the Beck Depression Inventory-II. San Antonio: Psychological Corporation; 1996.
20. Sanz J, Navarro ME, Vázquez C. Adaptación española del Inventario de Depresión de Beck-II (BDI-II): propiedades psicométricas en población general. Clin Salud 2003;14:249-80.
21. Beck AT, Steer RA. Manual for the Beck Anxiety Inventory. San Antonio: Psychological Corporation; 1993.
22. Sanz J. Recomendaciones para la utilización de la adaptación española del Inventario de Ansiedad de Beck (BAI) en la práctica clínica. Clin Salud 2014;25:39-48. https://doi.org/10.5093/cl2014a3
23. Ware JE, Kosinski M, Keller SD. A 12-item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. Med Care 1996;34:220-33. https://doi.org/10.1097/00005650-199603000-00003
24. Alonso J, Prieto L, Antó JM. The Spanish version of the SF-36 Health Survey: an instrument for measuring clinical results. Med Clin (Barc) 1995;104:771-6.
25. Vilagut G, Valderas JM, Ferrer M, Garin O, López-García E, Alonso J. Interpretation of SF-36 and SF-12 questionnaires in Spain. Gac Sanit 2008;22:130-9. https://doi.org/10.1157/13121076