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Original Article

Effect of memory therapy on enhancing postoperative cognitive function recovery and alleviating mood disturbances in brain glioma patients

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Abstract: Objective: To assess the impact of memory therapy on enhancing recovery of postoperative cognitive function and alleviating mood disturbances in brain glioma patients. Methods: This retrospective study included 160 brain glioma patients who met the inclusion criteria from August 2019 to July 2022. They were divided into a control group and an observation group according to according to different treatment method, with 80 cases in each group. The control group was given routine rehabilitation, while the observation group received additional memory therapy. The study compared complications between the two groups, focusing on the changes in cognitive function [using the Neurobehavioral Cognitive Status Check Scale (NCSE), Clinical Dementia Score (CDR)], mood disturbances [measured by the State Anxiety Scale (S-AI), Trait Anxiety Scale (T-AI), and Hospital Stress Scale score], health-promoting behaviors [evaluated with the Chinese Version of Health Promotion Lifestyle Scale-II (HPLP-II)], coping styles [assessed through the Medical Response Questionnaire (MCQM)], and cancer-related fatigue [using the Cancer-Related Fatigue Scale (CFS)] before and after intervention were observed. A total of 160 glioma cases were classified into either a good or poor prognosis category, based on their prognosis 12 months post-surgery. Baseline data from both groups were compared, and multivariate logistic regression was employed to analyze the factors influencing outcomes in glioma patients. Results: After intervention, the observation group exhibited higher scores of NCSE, HPLP-II, and CFS, but lower scores on the CDR, S-AI, T-AI and hospital stress scale compared to the control group (all $P<0.05$). Additionally, within the MCQM, the observation group showed reduced avoidance and yield scores, and an increased facing score, compared to the control group (all $P<0.05$). No significant difference was observed between the complication rates of the control (8.75%) and observation groups (3.75%) ($P>0.05$). However, the incidence of adverse prognosis was significantly lower in the observation group compared to the control group (8.75% vs 22.50%) ($P<0.05$). There were no significant differences in age, maximum tumor diameter, preoperative Karnofsky Performance Status score, gender or lesion location between the poor prognosis group and the good prognosis group (all $P>0.05$). The poor prognosis group had a higher proportion of patients in clinical stages III-IV and a lower proportion receiving recall therapy compared to good prognosis group ($P<0.05$). Multivariate logistic regression analysis identified clinical stage (III-IV stage) [OR=3.562 (95% CI: 1.476-8.600)] as a risk factor for poor prognosis after brain glioma surgery ($P<0.05$), while undergoing memory therapy [β=0.330 (95% CI: 0.99-0.842)] acted as a protective factor against poor prognosis ($P<0.05$). Conclusion: Memory therapy has been shown to promote postoperative cognitive function recovery in glioma patients, reduce anxiety and stress response, bolster coping mechanisms and health-promoting behavior, diminish cancer-related fatigue, and improve patient prognosis.

Keywords: Glioma, memory therapy, cognitive function, mood disturbance

Introduction

Glioma represents a prevalent type of primary intracranial tumor within the central nervous system and encompasses a variety of subtypes, including ependymoma, oligodendroglioma, astrocytoma, choroid plexus papilloma, and medulloblastoma [1]. Characterized by indistinct tumor margins, high invasiveness, and unchecked cellular proliferation, gliomas often initially present with headache. In more severe instances, patients may experience projectile vomiting; additionally, when the tumor exerts pressure on the optic nerve or causes

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papilledema, patients may suffer from retinal hemorrhage, a reduction in visual field, and diminished eyesight [2, 3]. According to data from the Central Brain Tumor Registry of the United States, glioma constitute approximately 80% of malignant brain tumors and around 27% of all tumors of the central nervous system [4]. Originating from the glial cells, these tumors typically spread in an infiltrative manner through the brain's white matter fiber bundles, differentiating and proliferating without restraint, often causing damage to surrounding healthy tissues and organs [5]. Currently, the clinical management of gliomas frequently employs surgery, radiotherapy, and chemotherapy. Surgical removal of the entire tumor can delay disease progression and extend patient survival. However, due to the disease itself, perioperative factors (such as significant blood pressure fluctuations, anesthesia, cerebral ischemia and hypoxia), and the impact of surgical trauma, approximately half of glioma patients after surgery experience varing degrees of cognitive impairment, seriously affecting their prognosis and quality of life [6]. Consequently, a critical and challenging research area focuses on strategies to prevent or mitigate cognitive decline following glioma surgery.

Reed proposed the theory of self-transcendence, suggesting that the enhancement of an individual's physical well-being and health status is a continuous process of growth and advancement [7]. By persistently seeking and exploring life's meaning, value, and truth, individuals can unlock their full potential to adapt effectively to diverse life challenges. Within this framework, memory therapy emerges as a social psychological intervention method. It involves the recollection of past emotions, thoughts, and experiences, aiding patients in coping with loss and bolstering their ability to adjust to their environment [8, 9]. Studies have shown that memory therapy proven beneficial for patients with Alzheimer's disease and stroke, offering relief from negative emotions and improving cognitive function [10, 11]. However, reports on its use during the perioperative period for glioma patients are scarce. Based on this, this study aims to examine the impact of memory therapy on the enhancement of cognitive function and alleviation of negative emotions following glioma surgery.

Materials and methods

General information

From August 2019 through July 2022, 160 glioma patients meeting the inclusion criteria were retrospectively chosen from Tenth People's Hospital of Tongji University. They were selected and divided into a control group and an observation group according to different treatment method, with 80 cases in each group. This study obtained the approval of the Medical Ethics Committee of Tenth People's Hospital of Tongji University.

Inclusion criteria: patients with confirmed brain glioma through post-excision CT, imaging, and pathological analysis [Diagnosis criteria based on the Glioma Diagnosis and Treatment Specification (2018 Edition)] [12]; patients diagnosed with glioblastoma for the first time; patients who underwent microsurgical treatment at the Tenth People's Hospital of Tongji University; patients at clinical stages I-IV; patients with clear consciousness and literacy, capable of participating in nursing care and scale assessment; patients who voluntarily signed the informed consent form.

Exclusion criteria: patients with mental, consciousness, or communication disorders; patients with vital organ dysfunction, including but not limited to the heart, liver, and kidneys; patients currently undergoing psychiatric medication treatment; patients with unstable vital signs; patients diagnosed with other tumor types; patients suffering from acute infection, or immune system disorders; patients with an estimated postoperative survival time of less than 3 months; patients without postoperative follow-up; patients with a previous history of brain injury surgery; patients whose symptoms indicating severe limb weakness, aphasia, and other significant neurological deficits; patients with a family history of mental illness; patients whose head CT scans suggesting organic brain diseases such as inflammatory or degenerative conditions; patients in pregnancy or lactation period.

Methods for control group

The control group was given routine postoperative rehabilitation. Monitoring of postoperative vital signs and evaluation of the Glasgow Coma

Scale were conducted within 24 hours post-surgery, assistance was provided to facilitate patient mobility, with careful measures taken to prevent coughing. Symptomatic support and treatment were administered according to medical guidelines. This included the use of sodium valproate (Sichuan Koride Pharmaceutical Co., Ltd., National Medical Approval No. H20084540, dosage form: 0.4 g) administered intravenously at a dose of 400 mg to prevent epilepsy. Antibiotic therapy involved intravenous administration of cefuroxime (Shenzhen CR Jiuxin Pharmaceutical Co., Ltd., National Medical Approval No. H20041983, dosage form: 0.5 g) with 1.5 g of cefuroxime sodium dissolved in 50 ml of sterile water for injection, aimed at infection prevention. Additional measures included anti-infection efforts, oxygen therapy, dehydration management, and meticulous inspection of the surgical site for any signs of bleeding or fluid discharge, with timely replacement of dressings as necessary. The catheter was removed between 6-24 hours post-anesthesia. Following the return to consciousness, patients were encouraged to perform active exercises such as ankle pumps and limb flexion-extension movements on the bed, to mitigate the risks of hypoxia and pulmonary infection. Enhanced pulmonary care included regular sputum aspiration, back tapping, repositioning, and continuous oxygen inhalation at a rate of 2 L/min.

The observation group received additional memory therapy. (1) Identifying the focus for memory therapy: This process involved conducting research and applying evidence-based nursing practices for memory therapy related to specific diseases, then customizing the therapy for each patient by incorporating their personal history, including childhood memories, hobbies, professional achievements, and other notable life events. (2) Creation of digital memory archives: Patients or their family members were assisted in gathering memory-laden media, such as music, videos, and photographs relevant to each subject, and these would be organized into personalized memory folders for each patient. For example, to compile content related to social gatherings, notable individuals, and historical events from the patient's formative years relevant to the theme of "significant periods", various devices like smartphones and laptops were employed for the search. (3) Intervention techniques: Patients were allowed to introduce themselves or recapitulate details from a previous session. ① Recollection of past events. Patients were arranged to choose a theme, watch a related video, and have nursing staff guide them in recounting their past stories related to the theme through targeted questions. ② Review and experience: Patients were motivated to fully relive the joy brought about by their cherished memories as they narrate their experiences, thereby to be aided in reinforcing their memories and reconstructing their life narratives from fragmented recollections. (4) Intervention techniques and precautions. ① Communication methods were adapted including language, gestures, facial expressions, and physical cues, to match the patient's comprehension and cultural background. When necessary, the information presented was clarify, and patients were guided, prompted, encouraged, and motivated towards active recollection. ② Throughout the patient's storytelling, attentive listening was the foremost priority. We avoided interrupting the patient, and exhibited patience with those whose expressions may lack logic or tend to be repetitive or monotonous, responding succinctly to any queries raised. ③ A positive rapport with patients was cultivated, with communication centered on their pleasant and joyful past experiences. Patients should be guided to delve into positive emotions and any negative feelings should be addressed in a constructive manner. Details regarding the intervention's topics, content, and scheduling are outlined in **Table 1**.

Outcome measures

(1) Cognitive function assessment. The Clinical Dementia Rating Scale (CDR) consists of 6 dimensions (orientation, memory, community affairs, home and hobbies, judgment and problem solving, and personal care), utilizing a five-point grading system where function inversely correlates with score [13]. The Neurobehavioral Cognitive State Examination Scale (NCSE) evaluates cognitive function across eight dimensions (orientation, comprehension, concentration, memory, reasoning, judgment, language, and praxis), with higher scores indicating better cognitive function [14]. Assessments were conducted pre-intervention and post-intervention. (2) Adverse emotions assessment. The State

Table 1. Intervention topic, content, and time

Time	Topic	Content	Situation
First Week	Family and Friends	Initially, through one-on-one lectures, distribution of brochures, or video presentations, patients and their families are informed about the benefits and details of memory therapy, facilitating in-depth communication and fostering a strong rapport between patients and healthcare professionals. With a focus on the theme of family and friends, patients are assisted in reminiscing about memorable events shared with friends or family members. Furthermore, patients are encouraged to share their experiences of raising children or caring for grandchildren, enhancing their sense of fulfillment and connection.	Group intervention, duration 40-60 minutes
Second Week	Childhood	Assist patients in revisiting their educational journey from their school days or cherished childhood memories. Additionally, play well-known nursery rhymes or reenact scenes of market vendors selling their wares to evoke nostalgic feelings.	Face-to-face, one-on-one, 20-30 minutes
Third Week	Work	Motivate patients to share their personal histories by employing techniques such as replicating significant objects, simulating scenarios, and other methods to help them reminisce about intriguing past work experiences or achievements.	Face-to-face, one-on-one, 20-30 minutes
Fourth Week	Major Events	Show movies or display images of social gatherings, notable personalities, historical occurrences, and other events from the patient's past to stimulate recollection of memories.	Group intervention, 20-30 min
Fifth Week	Leisure and Entertainment	Organize patients with similar interests into groups to partake in activities such as viewing TV dramas, watching movies, and playing chess in the ward. Foster communication among patients during these activities and allocate sufficient time for them to reminisce about the past.	Group intervention, 20-30 min

Trait Anxiety Inventory (STAI) comprises two parts, the STAI Anxiety Inventory (S-AI) and the Trait Anxiety Inventory (T-AI). Both parts assessed temporary emotional states across 20 items, employing a scoring system that ranges from 1 to 4 for each item, with total scores spanning from 20 to 80 points. A lower score indicates a more favorable psychological condition [15]. The Hospital Stress Scale encompasses 49 questions across five dimensions (family and social factors, threat of illness, lack of confidence, physical discomfort, unfamiliar environment). Each question was scored as 0 for "no" and 1 for "yes", with lower total scores suggesting a milder psychological stress response [15, 16]. Assessments were conducted pre-intervention and post-intervention. (3) Health promotion behavior, and cancer-related fatigue assessment. The health-Promoting Lifestyle Profile-II (HPLP-II) has 6 dimensions (health responsibility, physical activity, nutrition, stress management, spiritual growth, and interpersonal relationship) with a total of 52 items, each rated on a 1-4 point scale yielding a total score range of 52 to 208 points [17]. A higher score is indicative of a healthier lifestyle. The Cancer Fatigue Scale (CFS) includes 15 items in 3 dimensions (cognitive fatigue, emotional fatigue, and physical fatigue), with each item scored from 1 to 4 points, resulting in a total score range of 15 to 60 points [18]. Intensity of cancer-related fatigue is directly proportional to the score. Assessments were conducted pre-intervention and post-intervention. (4) Coping methods assessment. The Medical Coping Modes Questionnaire (MCQM) comprises 20 items and three dimensions (yielding, avoidance, and confrontation) [19]. A low score in yielding and avoidance dimensions indicates a positive coping style, while a high score in the confrontation dimension is associated with effective coping strategies. Assessments were conducted pre-intervention and post-intervention. (5) Complications. Complications included lung infection, high fevers, deep vein thrombosis, etc. (6) Prognosis. Postoperative follow-up was conducted through outpatient visits, phone calls, and other means. The follow-up data collection was completed, with the final follow-up date set for August 2023. End-point events were identified as recurrence of the disease necessitating secondary resection surgery, surgical pathological diagnosis or death due to disease progression.

Table 2. Comparison of general information between the two groups, (n, $\bar{x}\pm S$)

Group	Cases	Age (Years)	Tumor Diameter (cm)	Preoperative KPS score (points)	Gender	Lesion Location	Clinical Stage
					M/F	Frontal/parietal/temporal/occipital lobes	I/II/III/IV
Control Group	80	48.62±3.64	2.35±0.25	52.65±5.15	46/34	37/23/16/4	23/30/16/11
Observation Group	80	47.38±5.13	2.28±0.33	51.86±4.98	44/36	35/21/15/9	25/27/17/11
$\chi^2/t/Z$ Value		1.736	1.512	0.986	0.102	2.102	0.107
P-value		0.080	0.133	0.326	0.750	0.552	0.915

KPS, Karnofsky Performance Status.

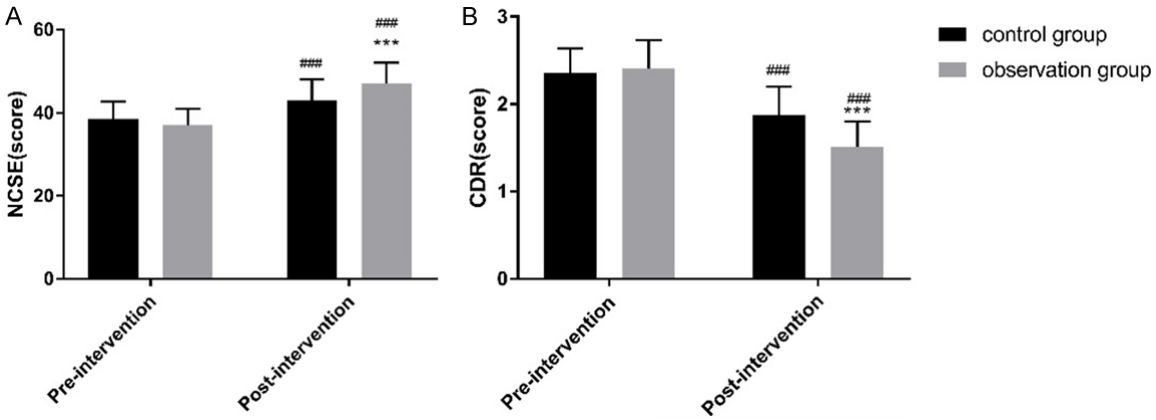

Figure 1. Comparison of cognitive function between the two groups. Note: (A) represents the NCSE score, (B) represents the CDR score; Compared to the control group, ***P<0.001; Compared to before the intervention in this group, ###P<0.001. NCSE, Neurobehavioral Cognitive Status Check Scale; CDR, Clinical Dementia Score.

Statistical analysis

The SPSS 23.0 software was used to process the data analysis. Graphical representations were generated using GraphPad Prism 8. The measureddata adhering to a normal distribution were represented as (χ±Sd), between-group comparisons were conducted using the independent sample t-test, complemented by the paired sample t-test for within-group analyses. The chi-square test was used for counted data, while the rank sum test was utilized for ranked data. Multiple logistic regression analysis was utilized to identify factors that influencing the poor prognosis of postoperative gliomas. A *P*-value of less than 0.05 was considered significant.

Results

Comparison of general information

The $t/X^2/Z$ value test indicated no significant differences in age, gender, lesion location, or clinical stage between the observation group and the control group. See **Table 2**.

Comparison of cognitive function

The independent sample t value test revealed no significant difference in NCSE and CDR scores between the observation group and the control group before intervention (both P>0.05). After intervention, the observation group exhibited a higher NCSE score and a lower CDR score compared to the control group (both P<0.05). See **Figure 1**.

Comparison of adverse emotions

The independent sample t-test indicated no statistically significant differences in S-AI, T-AI, or hospital stress scale scores between the observation group and the control group before intervention (all P>0.05). After intervention, the S-AI, T-AI, and hospital stress scale scores in the observation group were lower than those in the control group (all P<0.05). See **Figure 2**.

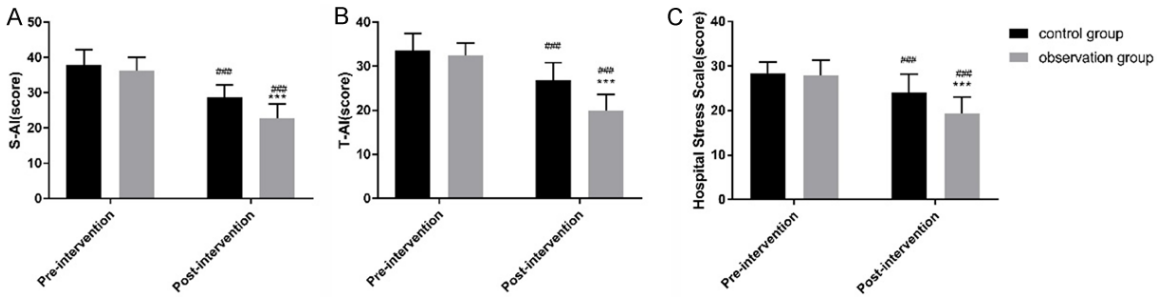

Figure 2. Comparison of adverse emotions between the two groups. Note: (A) is the S-AI score, (B) is the T-AI score, and (C) is the hospital stress scale; compared to the control group, ***P<0.001; compared to the group before intervention, ###P<0.001. S-AI, State Anxiety Scale; T-AI, Trait Anxiety Scale.

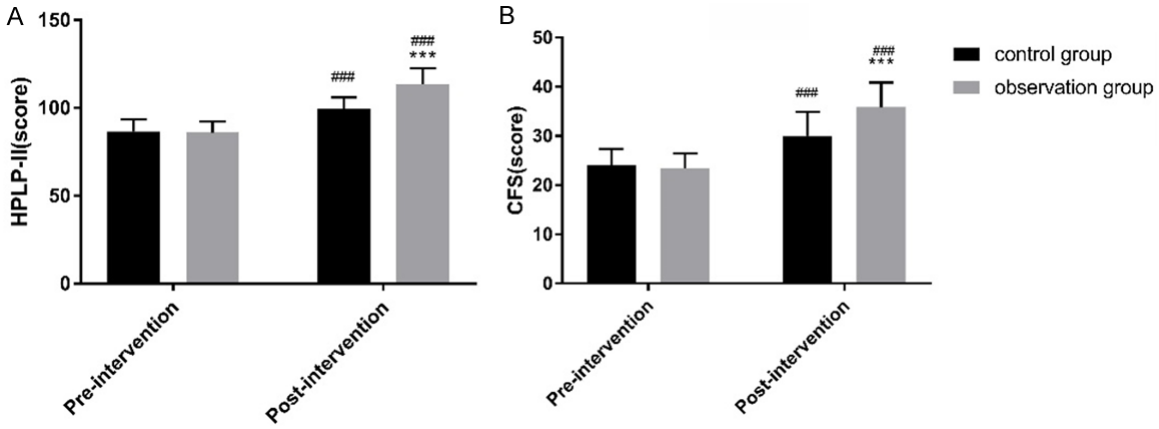

Figure 3. Comparison of health promotion behavior and cancer-related fatigue between the two groups. Note: (A) is HPLP-II score, (B) is CFS score; compared to the control group, ***P<0.001; compared to this group before intervention, ###P<0.001. HPLP-II, Chinese Version of Health Promotion Lifestyle Scale-II; CFS, Cancer-Related Fatigue Scale.

Comparison of health-promoting behaviors and cancer-related fatigue

There was no significant difference in the HPLP-II and CFS scores between the observation group and the control group before intervention (both P>0.05). After intervention, the HPLP-II and CFS scores of the observation group were higher than those of the control group (both P<0.05). See **Figure 3**.

Comparison of coping style

No statistically significant differences in the scores across all dimensions of the MCQM scale were observed between the observation group and the control group before intervention (P>0.05). After intervention, the observation group exhibited lower scores in the avoidance and yield dimensions and a higher score in the confrontation dimension on the MCQM scale compared to the control group (P<0.05). See **Figure 4**.

Comparison of complications

The χ^2 value test indicated that there was nosignificant difference in complications between the observation group (3.75%) and the control group (8.75%) (P>0.05). See **Table 3**.

Comparison of prognosis

The X^2 test revealed that the incidence of adverse prognosis was significantly lower in the observation group (8.75%) compared to the control group (22.50%) (P<0.05). See **Table 4**.

Univariate analysis of adverse prognosis after glioma surgery

The t/X^2 tests indicated no significant differences in age, maximum tumor diameter, preop-

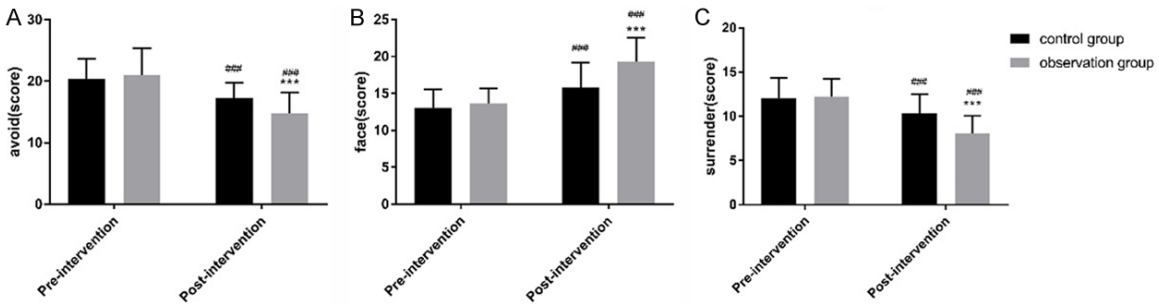

Figure 4. Comparison of coping styles between the two groups. Note: (A) is the avoidance score, (B) is the confrontation score, and (C) is the yield score; compared to the control group, ***P<0.001; compared to this group before intervention, ###P<0.001.

Table 3. Comparison of complications between two groups, n (%)

Group	Cases	Pulmonary Infection	Hyperpyrexia	Deep vein thrombosis	Total
Control Group	80	2 (2.50)	2 (2.50)	3 (3.75)	7 (8.75)
Observation Group	80	1 (1.25)	1 (1.25)	1 (1.25)	3 (3.75)
X^2 value					1.707
P-value					0.191

Table 4. Comparison of adverse prognosis between two groups, n (%)

Group	Cases	Secondary resection surgery	Mortality	Total
Control Group	80	5 (6.25)	13 (16.25)	18 (22.50)
Observation Group	80	2 (2.50)	5 (6.25)	7 (8.75)
X^2 value				5.736
P-value				0.017

erative Karnofsky Performance Status score, gender, or lesion location between the poor prognosis and the good prognosis groups (all P>0.05). However, subsequent X^2 testing revealed that the proportion of patients in clinical stage (I-II/III-IV) was lower in the poor prognosis group than that of the good prognosis group, and the percentage of patients who underwent reminiscence therapy in the poor prognosis group was also lower than that of the good prognosis group (both P<0.05). See **Table 5**.

Multivariate analysis of factors influencing poor prognosis after glioma surgery

The postoperative prognosis of brain glioma was taken as the dependent variable (with 0 indicating a good prognosis and 1 indicating a poor prognosis), and the relatively different indicators were compared in **Table 5** (clinical stage: 0 for stages I-II, 1 for stages III-IV; reminiscence therapy: 0 for yes, 1 for no) as independent variables, multiple logistic regression analysis was conducted. This analysis identified clinical staging (stages III-IV) [OR=3.562 (95% CI: 1.476-8.600)] as a risk factor for poor postoperative prognosis in glioma patients (P<0.05). Conversely, undergoing reminiscence therapy [β=0.330 (95% CI: 0.129-0.842)] was shown to be a protective factor against poor postoperative prognosis in glioma patients (P<0.05). See **Table 6**.

Discussion

Research has revealed that glioma patients frequently experience "overall pain" encompassing psychological, physical, spiritual, and social dimensions during prolonged treatment [20]. This multifaceted distress can lead to personality alterations, a decline in health-related behaviors, and diminished social capabilities. Utilizing photographs and videos from a patient's history can spark their interest in conversation, allowing them to revisit cherished memories and facilitate in-depth discussions on significant subjects with healthcare providers and fellow patients [21]. Memory therapy, a branch

Table 5. Univariate analysis of adverse prognosis after glioma surgery (n, $\bar{x}\pm S$)

Group	Cases	Age (Years)	Maximum diameter of tumor (cm)	Preoperative KPS score (points)	Gender	Location of lesion	Clinical stages	Memory therapy
					Male/Female	Frontal/parietal/temporal/occipital lobes	Stage I-II/Stage III-IV	Yes/No
Good prognosis group	135	47.89±4.15	2.30±0.28	52.12±4.96	78/57	61/36/28/10	95/40	73/62
Poor prognosis group	25	48.34±5.06	2.33±0.29	51.86±3.95	12/13	11/8/3/3	10/15	7/18
χ^2/t value		0.481	0.489	0.367	0.820	0.014	8.625	5.736
P-value		0.632	0.625	0.714	0.365	0.989	0.003	0.017

KPS, Karnofsky Performance Status.

Table 6. Multivariate analysis of factors influencing poor prognosis after glioma surgery

Project	*β*	S.E	Wald	*OR*	95% *CI*	*P*
Clinical stage (stage III-IV)	1.270	0.450	7.983	3.562	1.476-8.600	0.005
Accept memory therapy	-1.108	0.478	5.377	0.330	0.129-0.842	0.020

of social psychology, proves effective by targeting the root cause of the "knowledge, belief, and action" issue, concentrating on the patient's previous life experiences.

It is also known as nostalgia therapy, finding its roots in geriatric psychiatry. It primarily involves guiding patients to revisit past joyful feelings and life experiences through nostalgic elements like music, videos, and photos. It primarily involves guiding patients to recall past joyful feelings and life experiences through nostalgic elements like music, videos, and photos, which helps to boost the patients' sense of life satisfaction and happiness, elevate self-confidence, foster self-reconstruction, and enhance environmental adaptability [22]. Studies, including qualitative interviews and intervention research, have demonstrated that multimedia-based memory therapy can increase independence in daily activities, decrease withdrawal behaviors, and improve communication and social interaction skills [23, 24]. Furthermore, memory therapy has been credited with bolstering patients' resilience and easing the challenges of adjusting to current life circumstances [25]. However, the application of memory therapy in post-glioma surgery patient care remains underexplored in the literature. In this study, we observed higher scores in HPLP-II and lower tendencies towards avoidance and submission in the context of CFS assessments. This suggests that memory therapy can effectively enhance the coping strategies and health-promoting behaviors of glioma patients, while also diminishing cancer-related fatigue. The memory therapy protocol spanned 5 weeks, with each week dedicated to a different memory theme, such as family and friends, childhood, work, significant historical events, and leisure activities. This approach encouraged patients to engage deeply with and derive positive emotions from their recollections, which in turn, positively influenced their mood and contributed to a reduction in cancer-related fatigue. Throughout the memory retrieval process, it's crucial to support patients in reclaiming their sense of identity, mitigating feelings of sorrow and isolation, strengthening their social connections, and improving their overall happiness and subjective well-being, thereby bolstering their resilience against life's challenges.

Cognitive dysfunction is frequently observed as a complication after glioma surgery, with patients commonly experiencing deficits in memory, calculation abilities, spatial skills, orientation, and attention. At present, the underlying mechanisms of postoperative cognitive dysfunction in glioma cases remain largely unclear in clinical practice. However, it is often associated with alterations in overall brain functional connectivity, a temporary decline in cognitive function post-surgery, and the administration of antiepileptic medication in glioma patients. Research on individuals diagnosed with low-grade glioma indicates that the prevalence of postoperative cognitive dysfunction ranges from 19% to 83% [26]. A retrospective cohort study involving 168 brain glioma patients identified post-surgical impairments in executive

function, mental state, and memory, with incidences of 26.5%, 23.2%, and 19.3%, respectively [27]. Further investigation has linked the postoperative cognitive status of glioma patients to their psychological well-being, daily living capabilities, and overall quality of life [28]. These findings underscore the substantial incidence of cognitive impairment following glioma surgery, highlighting the importance of enhancing cognitive functions to improve the quality of life and alleviate the adverse psychological impact on patients. In this study, the NCSE score of the observation group after intervention was higher than that of the control group, whereas the scores of CDR, S-AI, T-AI, and hospital stress scale were lower in comparison to those of the control group. These outcomes suggest that memory therapy can promote postoperative cognitive function recovery in glioma patients, and dimmish anxiety and stress responses. This improvement may be attributed to several factors: (1) The plasticity of the nervous system allows patients to continuously activate their memory's language networks through self-narration and recall, thereby enhancing abilities such as delayed and immediate recall, learning, language organization, and expression. (2) Memory therapy aids patients in retrieving and reconstructing memories, safeguarding residual memory, and expediting the recovery of postoperative cognitive function. (3) The interaction between the intervener and the patient not only strengthens the patient-nurse relationship, boosts patient self-esteem, and prevents a loss of initiative but also improves social connections, reducing social withdrawal, negative emotions, and psychological stress, thus ameliorating cognitive impairments. Memory therapy has also been shown to significantly improve quality of life and cognitive and memory abilities, and reduce depression levels among the elderly [29]. Echoing the findings of this research, a nursing model based on memory therapy has been shown to potentially reduce the frequency of cognitive impairment and boost cognitive function in patients experiencing acute ischemic stroke [30]. The rate of adverse outcomes in the observation group was found to be lower than that in the control group. Additionally, subsequent multivariate logistic regression analysis further supports the efficacy of memory therapy in diminishing the likelihood of unfavorable prognoses following glioma surgery, thereby improving patient outcomes.

However, this study has certain limitations. Primarily, the small sample size and singular source may introduce some selection bias. Additionally, the follow-up period post-surgery was relatively brief, preventing an analysis of the long-term impact of memory therapy on glioma patients' prognosis. Lastly, the multifactor analysis may not have been sufficiently comprehensive, indicating a need for larger-scale, multicenter prospective studies in the future.

In conclusion, memory therapy has been shown to promote postoperative cognitive function recovery in glioma patients, reduce anxiety and stress response, bolster coping mechanisms and health-promoting behavior, diminish cancer-related fatigue, and improve patient prognosis.

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Disclosure of conflict of interest

None.

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