

# Effect of Whole Interventional Psychological Intervention Combined with Action-oriented Teaching on the Incidence of Postoperative Complications and Negative Emotion in Patients with Malignant Glioma

Qi Chen  
Ling Xu  
Hui Liang

**Objective.** To explore the impact of whole interventional psychological intervention combined with action-oriented teaching on the incidence of postoperative complications and negative emotion in patients with malignant glioma (MG). **Methods.** 96 MG patients admitted to our hospital (January 2020 - January 2021) were selected, and equally split into the control group (CG) treated with routine nursing and the study group (SG) treated with whole interventional psychological intervention combined with action-oriented approach on the basis of routine nursing. The impact of the two nursing patterns on the incidence of postoperative complications and negative emotion of patients was scientifically evaluated. **Results.** The patients of CG and SG showed no statistical difference in general data ( $P>0.05$ ). Compared with CG, the proportion of patients with severe and extreme pain, and the scores of Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS) in SG were notably lower ( $P<0.05$ ). According to statistics, intracranial hemorrhage occurred in 4 cases of CG and 0 case of SG, diarrhea occurred in 5 cases of CG and 1 case of SG, hyperpyrexia occurred in 4 cases of CG and 1 case of SG, and nausea and vomiting occurred in 2 cases of CG and 2 cases of SG, so it could be seen that the incidence of adverse reactions in SG was notably lower compared with CG ( $P<0.05$ ). The scores of 36-item short-form health survey scale (SF-36) and nursing quality in SG were notably higher compared with CG ( $P<0.05$ ). **Conclusion.** The combination of whole interventional psychological intervention and action-oriented teaching can effectively reduce the incidence of postoperative complications, relieve postoperative pain, improve psychological state and further improve quality of life of MG patients. Therefore, it is an effective intervention program that can improve nursing quality.

**Key words:** whole interventional psychological intervention; action-oriented teaching; malignant glioma (MG); negative emotion

*Tob Regul Sci.*™ 2021;7(5-1):4341-4348

DOI:doi.org/10.18001/TRS.7.5.1.212

**B**rain glioma, a common intracranial tumor, is one of the most serious threats to human health, with the characteristics of short course of disease, rapid growth, high recurrence rate and high mortality<sup>[1-4]</sup>. At present, surgical resection is the main treatment for brain glioma. But after surgical resection, patients are prone to complications such as intracranial hemorrhage, hyperpyrexia and diarrhea, which seriously affect the patients' postoperative recovery. According to

relevant researches, the whole interventional psychological intervention is helpful to improve the psychological state of patients with malignant glioma (MG), and during the nursing process, behavior guidance is as necessary as psychological intervention<sup>[5-8]</sup>. Originally, the action-oriented teaching method was mainly used in education field. In recent years, action-oriented nursing pattern has been derived from clinical nursing needs to correct the patients' bad behavior. But

Qi Chen Huashan Hospital of the FuDan University, Shanghai 200040, China, Ling Xu Huashan Hospital of the FuDan University, Shanghai 200040, China, Hui Liang\* Huashan Hospital of the FuDan University, Shanghai 200040, China \*Corresponding author: Huashan Hospital of the FuDan University, Shanghai 200040, China (E-mail: 137619322587@163.com)

*Tob Regul Sci.*™ 2021;7(5-1): 4341-4348

the research reports on this nursing pattern used in the field of tumor nursing are few, with a lack of valid reference data. In order to further optimize the clinical nursing pattern for MG patients, this paper explored the impact of the combination of whole interventional psychological intervention and action-oriented teaching on their postoperative complications and quality of life.

## MATERIALS AND METHODS

### Inclusion Criteria

- ① All patients were diagnosed with MG by brain CT scan, MRI examination and pathological examination.
- ② All patients were treated with surgical resection.
- ③ The expected survival period was not less than 6 months.
- ④ The patients and their families knew the details of this study and volunteered to participate in this study.

### Exclusion Criteria

- ① The patients with severe heart, liver and kidney dysfunction.
- ② The patients with intracranial hematoma.
- ③ The patients with cognition, communication and consciousness disorders.
- ④ The patients with other malignant tumors.

### Screening and Grouping of the Patients

96 MG patients admitted to our hospital (January 2020 - January 2021) were selected, and equally split into the control group (CG) treated with routine nursing, and the study group (SG) treated with whole interventional psychological intervention combined with action-oriented approach on the basis of routine nursing. The study was approved and supervised by the ethics committee of our hospital.

### Methods

All patients received routine nursing after surgery. ① The clinicians and nursing staff were scientifically assigned to the fixed groups, and clinical treatment and nursing were completed within group. ② The nursing staff knew more details about the patients' symptoms and nursing needs, communicated with doctors in time and gave scientific nursing measures under doctors' instruction. ③ After surgery, the health propaganda and education was carried out to improve the patients and their families' understanding of the disease, so as to promote postoperative rehabilitation training. ④ The

medical staff gave guidance on patients' postoperative medication, attention items and dietary taboo, and prevented patients from adverse reactions such as intracranial hemorrhage and hyperpyrexia. ⑤ After surgery, the patients' quality of life was followed up, and relevant records were made<sup>[9-12]</sup>.

The patients of SG additionally received the whole interventional psychological intervention combined with action-oriented approach. (1) Before surgery, the patients' personality was analyzed according to their families, careers and life experience. Individualized psychological intervention mainly containing relaxing therapy was carried out, with the specific steps as below. ① The process and purpose of whole interventional psychological intervention, therapeutic methods of brain glioma, surgical methods, the complications of chemotherapy and successful cases were introduced to the patients to standardize their health behavior. ② The patients' general information including aspects of social, psychological, and physiological was collected to access their current psychological health status. The patients and their families were encouraged, and their worries and difficulties were patiently listened to. The medical staff should win the patients and their families' trust by the method of transference, and notice their non-language behavior including the tone of talk, facial expression and actions. The patients' psychological problems were clarified and targeted intervention was implemented. ③ The medical staff communicated with the patients' families individually and asked them to provide necessary care and support for patients. ④ According to rational nursing concept, the comprehensive physical and mental nursing, proper training of limb function and muscle relaxation were given to patients. (2) After surgery, the medical staff provided supportive psychological intervention to improve the patients' cooperation in treating the disease, stabilize their emotion and increase their confidence<sup>[13-16]</sup>. (3) In the stage of reexamination and follow-up, the cognition, family and group therapy was carried out. ① The medical staff should further know about the patients' awareness of disease, communicate with them in detail, and correct their wrong views. ② According to the patients' age, gender, career, education degree, etc., targeted and individualized health education was carried out. While answering the patients' questions, the medical staff should emphasize the attention items of the their disease stage and the importance of emotional control to disease, and objectively and comprehensively analyze the knowledge of disease outcome. ③ The patients' emotional changes and thinking activities were intensively analyzed, and they were guided to correctly deal with the adverse emotions and

definitely face reality to improve their treatment compliance and make them actively cooperate with treatment in a happy mood<sup>[17-18]</sup>. Glioma patients were prone to depression, anxiety, fatigue, anorexia and decreased activity. The nursing staff should predict the possible behavioral symptoms in each disease stage. The action-oriented concept was combined, and effective guidance and timely positive evaluation were provided to reduce the incidence of adverse symptoms.

**Observation Indexes**

**General data**

The general data including age, years of education, gender, lesion distribution, tumor types and residence of both groups were collected.

**Visual analogue score (VAS) method**

A horizontal line which was 10 cm long was drawn on the paper, and numbers from 0 to 10 were equidistantly marked on it (numbers represented scores). Among them, 0 - 2 represented comfort, 3 - 4 represented mild discomfort, 5 - 6 represented moderate discomfort, 7 - 8 represented severe discomfort and 9 - 10 represented extreme discomfort. The patients were required to mark on the horizontal line according to their own feelings to indicate their pain level.

**Psychological states**

The patients' psychological states before and after nursing were evaluated by Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS). Each scale included 20 items and used a four-level scoring standard. For SAS, less than 50 points represented normal condition, 50 - 59 represented mild anxiety, 60 - 69 represented moderate anxiety, and 70 and above represented severe anxiety. For SDS, less than 53 points represented normal condition, 53 - 62 represented mild depression, 63 - 72 represented moderate depression, and 73 and above represented severe

depression.

**Incidence of complications**

During the nursing process, the patients' various adverse reactions such as nausea, vomiting, diarrhea, hyperpyrexia and intracranial hemorrhage were recorded in detail.

**Quality of life scores**

The 36-item short-form health survey scale (SF-36) was used to evaluate the patients' quality of life, including physiological function, physiological role, social function, bodily pain, emotional function, vitality, mental health and general health, with each dimension of 100 points. The scores were proportional to the patients' quality of life.

**Nursing quality**

After nursing intervention, our self-made questionnaire on the nursing quality was used to evaluate the nursing quality during nursing process, including environmental nursing, special nursing, basic nursing and service attitude, with each dimension of 15 points. The scores were proportional to the nursing quality. The pre-experimental evaluation of the questionnaire had a consistency reliability of 0.91 and a validity coefficient of 0.80.

**Statistical treatment**

In this study, SPSS22.0 was used to calculate the differences between groups. The count data and measurement data were tested by X<sup>2</sup> and t test, respectively. P < 0.05 meant the difference had statistical significance. In addition, GraphPad Prism 7 was used to draw related graphs.

**RESULTS**

**General Data**

There was no statistical difference in general data between the two groups (P>0.05), indicating comparability (See below).

**Table 1**  
Statistical processing of general data (n=48)

Items	CG	SG	t/X <sup>2</sup>	P
Age (years old)	63.86±2.65	64.02±2.72	0.2919	0.7710
Years of education (years)	10.23±2.81	10.31±3.14	0.1315	0.8956
Gender (male/female)	26/22	24/24	0.1670	0.683
Lesion distribution				

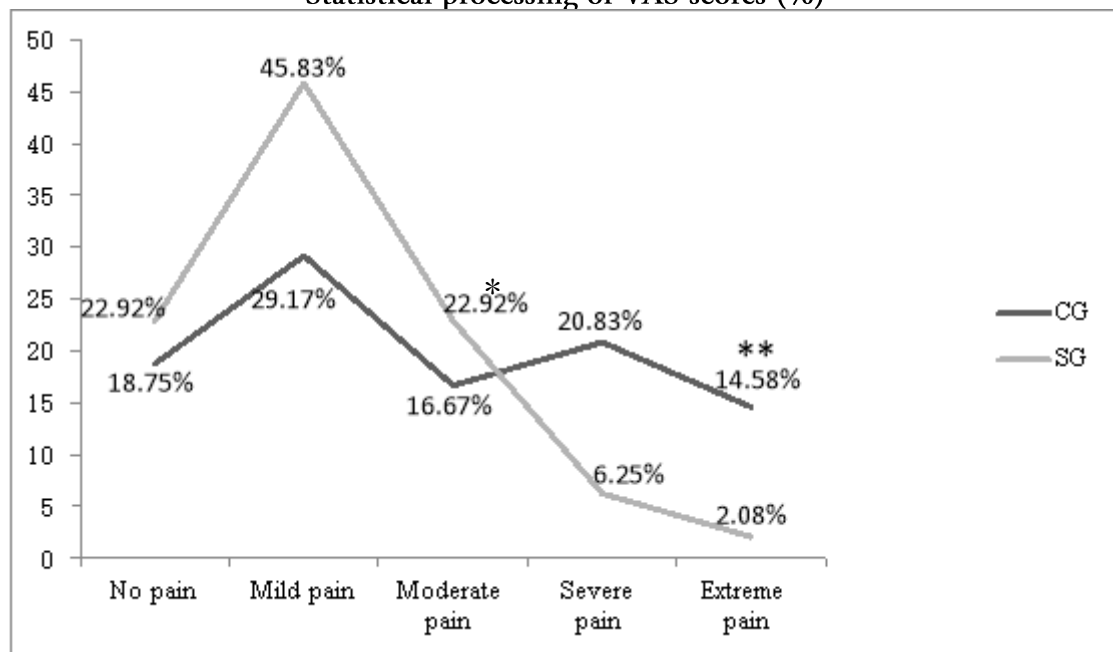
Frontal lobe	19(39.58)	17(35.42)	0.1778	0.673
Occipital lobe	14(29.17)	16(33.33)	0.1939	0.660
Parietal lobe	9(18.75)	10(20.83)	0.0656	0.789
Temporal lobe	6(12.5)	5(10.42)	0.1027	0.749
Tumor types				
Astrocytoma	28(58.33)	30(62.5)	0.1742	0.676
Oligodendroglioma	12(25)	9(18.75)	0.5486	0.459
Oligoastrocytoma	6(12.5)	5(10.42)	0.1027	0.749
Ependymoma	2(4.17)	4(8.33)	0.7111	0.399
Residence				
Cities and towns	28(58.33)	29(60.42)		
Countryside	20(41.67)	19(39.58)		

**VAS Pain Scores**

The proportion of patients with severe and extreme pain in SG was notably lower compared

with CG ( $P < 0.05$ ), with statistical significance (See below).

**Figure 1**  
Statistical processing of VAS scores (%)



Note: In CG, 9 cases felt no pain, 14 cases had mild pain, 8 cases had moderate pain, 10 cases had severe pain and 7 cases had extreme pain.

In SG, 11 cases felt no pain, 22 cases had mild pain, 11 cases had moderate pain, 3 cases had severe pain and 1 case had extreme pain.

\* indicated there was a significant difference in the proportion of patients with severe pain between the two groups ( $X^2=4.3596, P=0.037$ ).

\*\* indicated there was a significant difference in the proportion of patients with extreme pain between the two groups ( $X^2=4.9091, P=0.027$ ).

**Psychological States**

The SAS and SDS scores of SG were notably

lower compared with CG ( $P < 0.05$ ), with statistical significance (See below).

**Table 2**  
Statistical processing of SAS and SDS scores ( $\bar{x} \pm s$ )

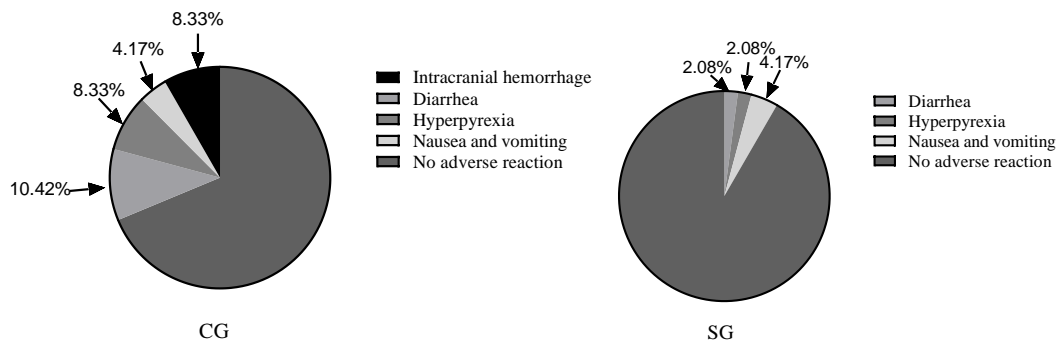
Items	n	SAS scores	SDS scores
CG	48	50.87±6.43	54.71±6.71
SG	48	38.19±5.12	40.24±3.88
t		10.6880	12.9339
P		<0.001	<0.001

**Incidence of Complications**

According to statistics, intracranial hemorrhage occurred in 4 cases of CG and 0 case of SG, diarrhea occurred in 5 cases of CG and 1 case of SG, hyperpyrexia occurred in 4 cases of

CG and 1 case of SG, and nausea and vomiting occurred in 2 cases of CG and 2 cases of SG, so it could be seen that the incidence of adverse reactions in SG was notably lower compared with CG ( $P < 0.05$ ) (See below).

**Figure 2**  
Incidence of adverse reactions (%)



Note: The total incidence of adverse reactions was 31.25% (15 cases) in CG and 8.33% (4 cases) in SG. The total incidence of adverse reactions of the two groups were obviously different ( $X^2 = 7.9398$ ,  $P = 0.005$ ).

**Quality of Life Scores**

The scores of physiological function, physiological role, social function, bodily pain,

emotional function, vitality, mental health and general health of SG were notably higher compared with CG ( $P < 0.05$ ) (See below).

**Table 3**  
Statistical processing of SF-36 scores ( $\bar{x} \pm s$ )

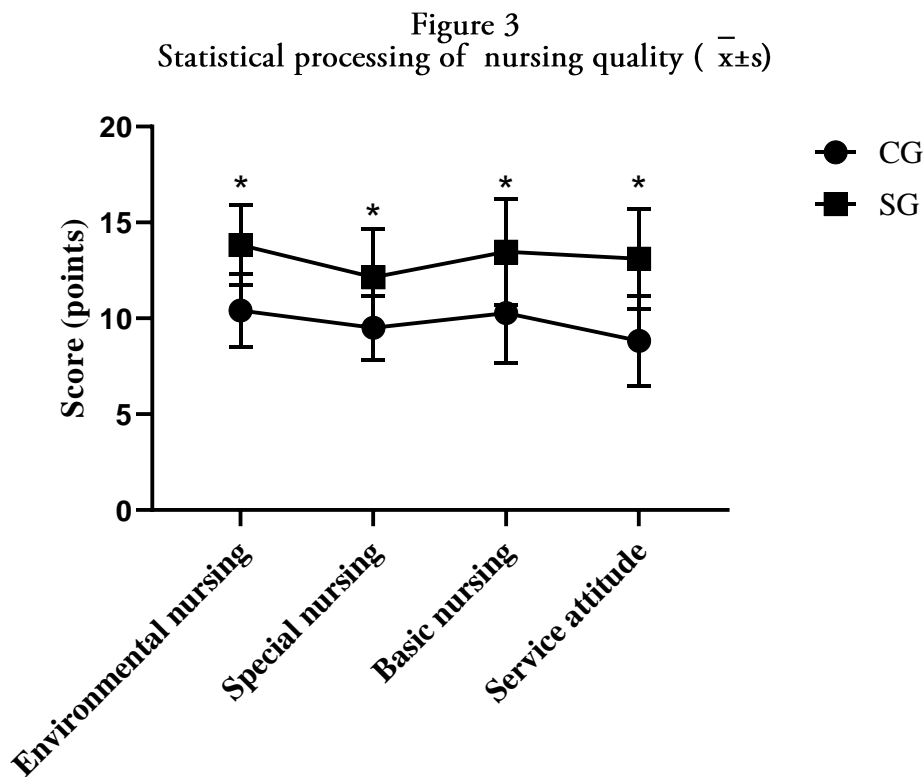
Dimensions	CG	SG	t	P
Physiological function	72.84±11.58	81.04±12.15	3.3847	0.0010
Physiological role	70.48±11.86	79.23±13.52	3.3707	0.0011
Bodily pain	77.69±12.34	82.94±13.43	1.9943	0.0490

Social function	73.02±12.07	78.96±12.25	2.3930	0.0187
Emotional function	70.00±11.51	75.77±12.38	2.3649	0.0201
Vitality	70.13±11.59	78.51±12.47	3.4103	0.0010
Mental health	70.17±11.18	76.88±11.56	2.8907	0.0048
General health	71.22±12.65	79.61±13.50	3.1419	0.0022

**Nursing quality**

The scores of environmental nursing, special nursing, basic nursing and service attitude in SG

were notably higher compared with CG (P<0.05), with statistical significance (P<0.05) (See below).



Note: The horizontal axis represented evaluation dimensions, namely environmental nursing, special nursing, basic nursing and service attitude, and the vertical axis represented the score (points).

In CG, the scores of environmental nursing, special nursing, basic nursing and service attitude were (10.41±1.92), (9.50±1.66), (10.28±2.61) and (8.83±2.35), respectively.

In SG, the scores of environmental nursing, special nursing, basic nursing and service attitude were (13.82±2.09), (12.14±2.52), (13.47±2.76) and (13.10±2.62), respectively.

The \* from left to right indicated the scores of environmental nursing, special nursing, basic nursing and service attitude of the two groups were significantly different. (t=8.3245, 6.0612, 5.8181 and 8.4056; All showed P <0.001).

**DISCUSSION**

The behavioral symptoms such as bad emotion, fatigue, sleep disorder and decreased activity are the most common associated symptoms and adverse reactions in the treatment of glioma<sup>[19-21]</sup>. Janet Yang<sup>[22]</sup>, Z. Jessica, I.

Goldberg<sup>[23]</sup> and other scholars have stated that behavioral symptoms can directly affect the quality of life, treatment compliance and prognosis effect of glioma patients. However, the pathogenesis of such symptoms is not clarified, often ignored by doctors and patients. The study of scholar Sherwood<sup>[24]</sup> showed that before

surgery, 42.1% of glioma patients had depression and 50% had anxiety, and after surgery, 15.8% had depression and 38.5% had anxiety, indicating that the probability of depression before surgery was notably higher than that after surgery. Therefore, it can be considered that it is not enough to only apply psychological intervention to MG patients after surgery, and whole interventional psychological intervention should be implemented. Psychological intervention can give patients mental guidance for reducing the occurrence of adverse behavioral symptoms. External intervention needs to be combined to completely change a series of behavioral symptoms of glioma patients. The action-oriented teaching method takes tasks as the starting point and runs through the nursing process to help patients correct bad behavior. However, the analysis of its application effect in the medical nursing field is very few. In this study, on the basis of routine nursing, the patients of SG were treated with whole interventional psychological intervention combined with action-oriented approach for the purpose of improving their mental state and quality of life.

The study concluded that, compared with CG, the proportion of patients with severe and extreme pain, and the SAS and SDS scores in SG were notably lower ( $P < 0.05$ ), which tallied with the research of Ellen Ruud<sup>[25]</sup>. According to statistics, intracranial hemorrhage occurred in 4 cases of CG and 0 case of SG, diarrhea occurred in 5 cases of CG and 1 case of SG, hyperpyrexia occurred in 4 cases of CG and 1 case of SG, and nausea and vomiting occurred in 2 cases of CG and 2 cases of SG, so it could be seen that the incidence of adverse reactions in SG was notably lower compared with CG ( $P < 0.05$ ). The scores of SF-36 and nursing quality in SG were notably higher compared with CG ( $P < 0.05$ ). This study has shown that whole interventional psychological intervention combined with action-oriented teaching can effectively reduce the incidence of adverse reactions and help relieve the negative emotion such as depression and anxiety of MG patients. This nursing model improves the nursing quality from the aspects of environmental nursing, special nursing, basic nursing and service attitude, so that the patients' physiological function, physiological role, social function, emotional function, vitality, mental health and general health are effectively improved, and their bodily pain is relieved.

In summary, the whole interventional psychological intervention combined with action-oriented teaching can effectively reduce the incidence of postoperative complications, relieve postoperative pain, improve psychological state and further improve quality of life of MG

patients. Therefore, it is an effective intervention measure that can improve the nursing quality and worth spreading in clinical practice.

## FUNDING

This work was supported by National Natural Science Foundation of China, General Project,, Study on the Protective Effect and Mechanism of Angiotensin -(1-7) on MIRI by Inhibiting Endoplasmic Reticulum Stress(81570273).

## REFERENCES

1. CHERYL D. TIERNEY, LESLIE R. WALKER-HARDING. Early Intervention for Functional Somatic Symptoms Using Psychological Interventions Highlights the Need for a Medical Home Care Model for Pediatric Patients[J]. *The Journal of pediatrics*,2017,187:15-17.
2. JODA LLOYD, FRANK W. BOND, PAUL E. FLAXMAN. The value of psychological flexibility: Examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout[J]. *Work & stress*,2013,27(2):181-199.
3. SHOSHANA R. RATH, TREYA M. LONG, NATASHA L. BEAR, et al. Metabolic and Psychological Impact of a Pragmatic Exercise Intervention Program in Adolescent and Young Adult Survivors of Pediatric Cancer-Related Cerebral Insult[J]. *Journal of adolescent and young adult oncology*,2018,7(3):349-357.
4. CHAMBERS, S. K., MORRIS, B. A., CLUTTON, S., et al. Psychological wellness and health-related stigma: a pilot study of an acceptance-focused cognitive behavioural intervention for people with lung cancer[J]. *European journal of cancer care*,2015,24(1):60-70.
5. EVANGELI, MICHAEL, LUT, IRINA, ELY, AMANDA. A longitudinal evaluation of an intensive residential intervention (camp) for 12-16 year olds living with HIV in the UK: evidence of psychological change maintained at six month follow-up[J]. *AIDS care*,2019,31(1):85-89.
6. THOMSON, LINDA J., LOCKYER, BRIDGET, CAMIC, PAUL M., et al. Effects of a museum-based social prescription intervention on quantitative measures of psychological wellbeing in older adults[J]. *Perspectives in public health*,2018,138(1):28-38.
7. MATSUNO, EMMIE, ISRAEL, TANIA. Psychological Interventions Promoting Resilience Among Transgender Individuals:

- Transgender Resilience Intervention Model (TRIM)[J]. *The Counseling psychologist*,2018,46(5):632-655.
8. MIAOMIAO JIANG, ZHIQIN YIN, SIJIAO LI, et al. Effect of Positive Psychological Intervention on Well-Being, 2-Week Illness Prevalence, and Salivary Immunoglobulin A[J]. *Western journal of nursing research*,2018,40(6):889-906.
  9. CHARLOTTE ?NGSTR?M-BR?NNSTR?M, VIVECA LINDH, TARA MULLANEY, et al. Parents' Experiences and Responses to an Intervention for Psychological Preparation of Children and Families During the Child's Radiotherapy[J]. *Journal of pediatric oncology nursing: official journal of the Association of Pediatric Oncology Nurses*,2018,35(2):132-148.
  10. POWERS, JOSEPH T., COOK, JONATHAN E., PURDIE-VAUGHNS, VALERIE, et al. Changing Environments by Changing Individuals: The Emergent Effects of Psychological Intervention[J]. *Psychological science: a journal of the American Psychological Society*,2016,27(2):150-160.
  11. STOCK, NICOLA MARIE, FERAGEN, KRISTIN BILLAUD. Comparing Psychological Adjustment Across Cleft and Other Craniofacial Conditions: Implications for Outcome Measurement and Intervention[J]. *The Cleft palate-craniofacial journal: official publication of the American Cleft Palate-Craniofacial Association*,2019,56(6):766-772.
  12. GREEN JONATHAN, GARG SHRUTI. Annual Research Review: The state of autism intervention science: progress, target psychological and biological mechanisms and future prospects[J]. *Journal of child psychology and psychiatry*,2018,59(4):424-443.
  13. EKSIOGLU, S., SEPICI-DINCEL, A., ATIK, A. D., et al. Effective teaching and learning of biochemistry and molecular life sciences with action-oriented and e-learning approaches versus instructor-dominated lecture methods[J]. *The FEBS journal*,2015,282(Suppl.1):354.
  14. AULI TOOM, MIKKO TIILIKAINEN, LAURI HEIKONEN, et al. Teacher candidate learning of action-oriented knowledge from triggering incidents in teaching practice[J]. *Teachers and Teaching*,2019,25(5):536-552.
  15. ALI MU. Research on the Practice of Railway in Higher Vocational Colleges Based on Computer Action-oriented Teaching Model[J]. *Journal of Physics: Conference Series*,2021,1744(3):032038 (6pp).
  16. CHRISTINE SIEGEL TERM S. ARMSTRONG. *Nursing Guide to Management of Major Symptoms in Patients with Malignant Glioma*[J]. *Seminars in oncology nursing*,2018,34(5):513-527.
  17. NORISSA HONEA. End-of-Life Care for Patients with Glioma[J]. *Seminars in oncology nursing*,2018,34(5):553-568.
  18. AFFRONTI, M.L., SCHNEIDER, S.M., HERNDONII, J.E., et al. Adherence to antiemetic guidelines in patients with malignant glioma: A quality improvement project to translate evidence into practice[J]. *Supportive care in cancer: official journal of the Multinational Association of Supportive Care in Cancer*,2014,22(7):1897-1905.
  19. CONNIE MUÑOZ, GLORIA JUAREZ, MARIA L. MUÑOZ, et al. The Quality of Life of Patients with Malignant Gliomas and Their Caregivers[J]. *Social Work in Health Care*,2008,47(4):455-478.
  20. Symptom Experiences and Coping Strategies among Multi-ethnic Solid Tumor Patients Undergoing Chemotherapy in Malaysia[J]. *Asian Pacific Journal of Cancer Prevention* ,2015,16(2):723-730.
  21. JIJUAN, ZHUHUI, ZHAOJU-ZHEN, et al. Negative emotions and their management in Chinese convalescent cervical cancer patients: a qualitative study[J]. *Journal of International Medical Research*,2020,48(9).
  22. JANETYANG, Z., MCCOMAS, K.A., GAY, G.K., et al. Comparing decision making between cancer patients and the general population: Thoughts, emotions, or social influence?[J]. *Journal of health communication*,2012,17(1/5):477-494.
  23. JESSICA I. GOLDBERG, DENA SCHULMAN-GREEN, MARISOL HERNANDEZ, et al. Self-Management Interventions for Psychological Distress in Adult Cancer Patients: A Systematic Review[J]. *Western journal of nursing research*,2019,41(10):1407-1422.
  24. SHERWOOD, PAULA R., PRICE, THOMAS J., WEIMER, JASON, et al. Neuro-oncology family caregivers are at risk for systemic inflammation[J]. *Journal of Neuro-Oncology*,2016,128(1):109-118.
  25. ELLEN RUUD, JON H?VARD LOGE, HANNE C. LIE. Do negative emotions expressed during follow-up consultations with adolescent survivors of childhood cancer reflect late effects?[J]. *Journal of the Medical Association of Thailand =: Chotmaihet thangphaet*,2017,100(11):2098-2101.