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Application of Personalized Nursing Can Reduce the Depression and Promote the Functional Recovery of Cerebral Infarction Patients

Xuezhen Huang*, Xiujuan Li, Xiaoqing Huang

Abstract

Objective: This paper aimed to explore the application of personalized nursing to reduce the depression and promote the limb function recovery of cerebral infarction (CI) patients.

Methods: Two hundred patients with acute cerebral infarction (ACI) admitted to our hospital from January 2016 to January 2019 were enrolled as research objects, of which 120 were treated with personalized nursing (an observation group) and 80 were treated with routine nursing (a control group). The patients were compared with respect to their surgical indications [length of hospital stay (LOS), arterial pressure (AP), heart rate (HR)], limb recovery [muscle strength grading, Fugl-Meyer Assessment (FMA) score, Barthel Index (BI) score], neurological function recovery [National Institute of Health Stroke Scale (NIHSS) score, Scandinavian Stroke Study (SSS) score], post-nursing mental health [Self-Rating Anxiety Scale (SAS) score, Self-Rating Depression Scale (SDS) score], total effective rate, and incidence of postoperative adverse reactions. Their postoperative satisfaction was investigated.

Results: Compared with the control group, patients in the observation group had better surgical indications, more grades 4 and 5 muscle strength, higher FMA and BI scores, lower post-nursing NIHSS, SSS, SAS, and SDS scores, lower incidence of adverse reactions, and higher total effective rate and satisfaction.

Conclusion: The application of personalized nursing can effectively reduce the depression and anxiety of CI patients, and better promote their limb function recovery, so it is worthy of clinical promotion.

Keywords: personalized nursing, cerebral infarction, limb function, muscle strength grading

Introduction

Having attracted more and more attention in recent years, personalized medical care is used in more fields, especially in the nursing of many elderly diseases such as diabetes. As more clinical studies focus on cost-effective and patient-centered nursing, people's demands for personalized medical services in nursing have become higher(Han ,2016;Tokunaga et al.,2017; Mikkola et al.,2020). Personalized nursing needs to have a certain control over the specific conditions of patients, make them know about the operative process before operation, and design a set of nursing plans including personalized diet guidance, personalized health education, and personalized psychological intervention based on their personality. This nursing mode is designed for patients' personality, so it has a positive effect on the postoperative nursing of many diseases (Lou,2017; Hellmann et al.,2016; Dookie et al.,2018; Ellul et al.,2016). In this study, we used it to carry out postoperative nursing for patients with cerebral infarction (CI).

CI is a common and dangerous cerebrovascular disease(Zhang,2019). With the aging of the population and changes in people's life and diet, the incidence, disability rate, and mortality rate of cerebrovascular diseases have increased significantly, which seriously affects the patients' quality of life and life safety(Wang et al.,2018;

Integrated Zone 1, Guangdong Provincial People's Hospital, Foshan 528000, China
**Corresponding Author: Xuezhen Huang*
E-mail: Huangxuezhen998@163.com

DuPont and Jaffe, 2017; Gao et al.,2017). Approximately 85% of stroke patients suffer from post-stroke depression (PSD)(Robinson and Jorge,2016), which not only leads to more serious dysfunction, but also increases the mortality rate, so this disease is usually regarded as a common sequela of stroke (Williams et al.,2004; Cully et al., 2005; Tu et al.,2018). Therefore, it is particularly important to guide the psychological emotion of CI patients after operation. However, few related studies have reported the effects of personalized nursing on CI and PSD. The purpose of this study is to explore the application of this nursing method, its impact on PSD in CI patients, and its promotion on other functional recovery.

1 Methods

1.1 General information and inclusion and exclusion criteria

Two hundred patients with acute cerebral infarction (ACI) admitted to our hospital from January 2016 to January 2019 were enrolled as the research objects. Of them, 120 cases were treated with personalized nursing (the observation group), including 73 males and 47 females, with an average age of (59.43±8.67) years. Other 80 cases were treated with routine nursing (the control group), including 54 males and 36 females, with an average age of (60.32±7.86) years.

Inclusion criteria: Patients whose comprehension ability was normal and who could basically understand medical advice; patients whose expression ability was normal and who could accurately express their physical discomfort; patients who had no new stroke in their symptoms during the latest month; patients who had no any diseases that affected the study. Exclusion criteria: Patients with other serious underlying diseases (including the dysfunction of internal organs such as heart, liver, and kidney); patients with mental disorders (such as constant anxiety) and prone to depression and suicide. The patients and their family members agreed to the study and signed the relevant consent form. This study was approved by the Ethics Committee of our hospital.

1.2 Nursing methods

Patients in the control group were treated with routine nursing. After admission, the nursing staff actively rescued the patients, and monitored their vital signs (such as heartbeat and blood pressure) and condition changes. The patients inhaled oxygen, with ward temperature and humidity determined based on their comfortable and relaxed requirements. The staff nursed the patients' position on the hospital beds (such as assisting them to turn over to reduce bedsore), and rehabilitation training was conducted to make the patients recover as soon as possible. On this basis, patients in the observation group were treated with personalized psychological nursing. The nursing staff had a detailed understanding of the patients' basic conditions (such as age, educational level, conditions), and combined their needs to explain the relevant knowledge of the disease, so as to improve their understanding of the disease. If they had negative emotions which developed into PSD, the medical staff should actively talk to them, during which the staff should help them find out the crux of their depression and negative emotions, and guide them to face up to the disease, thus improving their confidence in recovery. Health education activities and CI-related knowledge lectures were regularly conducted to allow the patients to communicate more with their families, so that the families could master the patients' psychological status and give them more care. The staff also guided those elderly patients with severe CI to do simple knee flexion and elbow extension exercises in order to restore their limb functions. At the same time, the staff regularly changed their body position and maintained their limb balance, to avoid nerve spasm and paralysis. Meanwhile, the patients carried out kneading training. They conducted lifting exercises and meal training according to their conditions, and gradually shifted the training contents to complex actions such as writing. The staff instructed the patients with language disorders to perform pronunciation training, and corrected their facial muscle incoordination and pronunciation.

1.3 Outcome measures

(1) Surgical indications [heart rate (HR) and arterial pressure (AP)]

The length of hospital stay (LOS) of patients in the two groups was observed and compared. After hospitalization, the patients were detected in real time with respect to their AP and HR, which were compared between the two groups before treatment and 14 days after treatment.

(2) Limb recovery

The muscle strength of the patients after treatment was taken as the indicator for judging limb recovery. Grade 0 indicated that the patients were unable to feel muscle contraction. Grade 1 indicated that the patients were unable to perform obvious movement, but muscle contraction could be performed. Grade 2 indicated that the patients were unable to overcome limb weight movement

and to perform unloaded movement on the horizontal plane. Grade 3 indicated that the patients were unable to perform movement against lime weight. Grade 4 indicated that the patients were able to overcome movement with moderate resistance. Grade 5 indicated that the patients were able to move on their own. Fugl-Meyer assessment (FMA) score (Kim et al.,2016) and Barthel Index (BI) score (Ryg et al.,2018) before nursing, 14 days after nursing, and 1 month after nursing were compared between the two groups, to assess the patients' limb recovery. The two scores were positively correlated with limb recovery.

(3) Neurological function and mental health

National Institute of Health Stroke Scale (NIHSS) score(Fan et al.,2017)and Scandinavian Stroke Study (SSS) score(Askim et al.,2016)) were used to assess the neurological function recovery of the patients. A lower score indicated better neurological function recovery. Self-Rating Anxiety Scale (SAS) (Dunstan and Scott,2020) and Self-Rating Depression Scale (SDS)(Chung et al.,2018) were used to assess the mental health levels (20 items, 0-100 points in total) of the patients before treatment and 1 month after treatment. A higher score indicated a worse mental health level.

(4) Postoperative complications

The adverse reactions of the patients were counted and compared 28 days after treatment, including epilepsy, urinary incontinence, pulmonary infection, and dementia after stroke.

(5) Total effective rate

Efficacy criteria: Markedly effective indicated that the improvement rate of neurological function was over 46%, and the ability of daily living basically recovered. Effective indicated that the improvement rate of neurological function was 18%-45%, and the ability of daily living recovered to some extent. Ineffective indicated that the improvement rate of neurological function was less than 18%, and the ability of daily living did not recover. Total effective rate = markedly effective rate + effective rate.

(6) Treatment satisfaction

The treatment satisfaction questionnaire was used to test the patients' treatment satisfaction, whose scores were compared between the two groups. Test contents and evaluation criteria were self-made. The total score was 100 points, of which 100-85 points were satisfied, more than 70 points were generally satisfied, and less than 70 points were dissatisfied.

1.4 Statistical methods

SPSS 19.0 (Asia Analytics Formerly SPSS China) was used for the statistical analysis of comprehensive data. Count data were analyzed by X^2 test, while measurement data were expressed by (X+S) and analyzed by t test. When $P<0.05$, the difference was statistically significant.

2 Results

2.1 Comparison of general information

There was no significant difference between the observation and control groups in terms of general information such as gender, age, body mass index (BMI), history of smoking, history of drinking, and obesity or not ($P>0.05$). See Table 1 for details.

Table 1. **Comparison of general information**

Categories	Observation group (n=120)	Control group (n=80)	t/X^2	P
Gender			0.01	0.953
Male	73 (60.83)	49 (61.25)		
Female	47 (39.17)	31 (38.75)		
Age (Years)	59.43±8.67	60.32±7.86	0.74	0.461
BMI (kg/m^2)	22.87±1.65	23.23±1.78	1.47	0.145
Smoking			0.08	0.773
Yes	59 (49.17)	41 (51.25)		
No	61 (50.83)	39 (48.75)		
Drinking			0.06	0.803
Yes	82 (68.33)	56 (70.00)		
No	38 (31.67)	24 (30.00)		
Hyperlipemia			0.04	0.834
Yes	93 (77.50)	63 (78.75)		
No	27 (22.50)	17 (21.25)		
Hypertension			0.03	0.858
Yes	75 (62.50)	49 (61.25)		
No	45 (37.50)	31 (38.75)		
Diabetes			0.01	0.893
Yes	91 (75.83)	60 (75.00)		
No	29 (24.17)	20 (25.00)		

2.2 Comparison of surgical indications

LOS in the observation group was shorter than that in the control group [(7.77±1.98) d vs (14.63±2.84) d (P<0.05). Before nursing, 14 days after nursing, and 1 month after nursing, AP in the observation group was (117.12±4.92) mmHg, (96.12±2.02) kPa, and (95.55±1.81) kPa, respectively; HR in the observation group was (105.88±4.79) bpm, (87.54±3.67) bpm, and (88.01±3.35) bpm, respectively. Before nursing, 14 days after nursing, and 1 month after nursing, AP in the control group was (117.85±5.28) mmHg, (103.78±3.01) kPa, and (103.94±2.87) kPa, respectively. Before treatment and 1 month after treatment, HR in the control group was (106.24±5.26) bpm, (95.47±3.56) bpm, and (94.86±2.76) bpm, respectively. AP and HR in the observation group were significantly lower than those in the control group 14 days and 1 month after nursing (P<0.05). See Figure 1 for details.

Figure 1

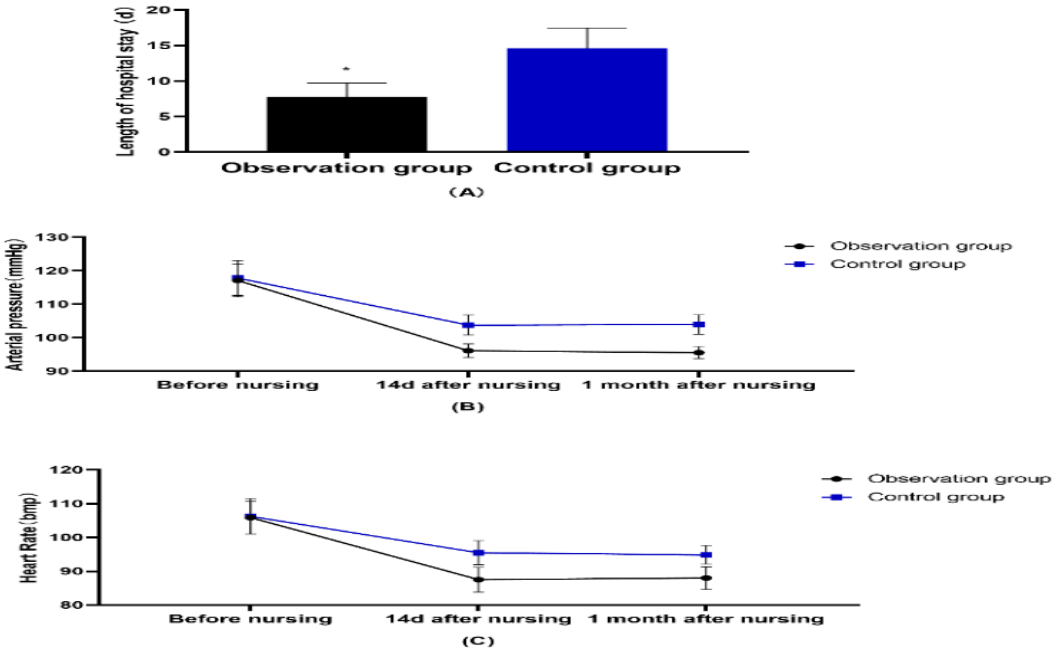

Figure 1. **Surgical indications**

(A) LOS in the observation group was shorter than that in the control group (P<0.05). Note: * indicates the comparison with the observation group. (B) AP in the observation group was significantly lower than that in the control group 14 days and 1 month after nursing (P<0.05). (C) HR in the observation group was significantly lower than that in the control group 14 days and 1 month after nursing (P<0.05).

2.3 Comparison of limb function

(1) Muscle strength grading

The patients with grades 0-3 in the observation group were significantly less than those in the control group, while those with grades 4-5 were significantly more than those in the control group (P<0.05). See Table 2 for details.

Table 2. **Muscle strength grading**

Categories	Observation group (n=120)	Control group (n=80)	X^2	P
0	2	8	7.02	0.008
1	1	5	4.84	0.028
2	3	15	15.48	<0.001
3	6	12	5.86	0.016
4	56	20	9.56	0.002
5	52	20	7.00	0.008

(2) Limb function

Before treatment and 1 month after treatment, FMA scores in the observation group were

(50.63±6.22) and (91.76±8.02), respectively, while the scores in the control group were (51.02±5.72) and (82.34±7.93), respectively. One month after treatment, the FMA scores in both groups increased, and the score in the observation group was significantly higher than that in the control group (P<0.05). Before treatment and 1 month after treatment, BI scores in the observation group were (39.44±4.12) and (83.27±6.53), respectively, while the scores in the control group were (39.18±3.87) and (71.23±5.89), respectively. One month after treatment, the BI scores in both groups increased, and the score in the observation group was significantly higher than that in the control group (P<0.05). See Figure 2 for details.

Figure 2

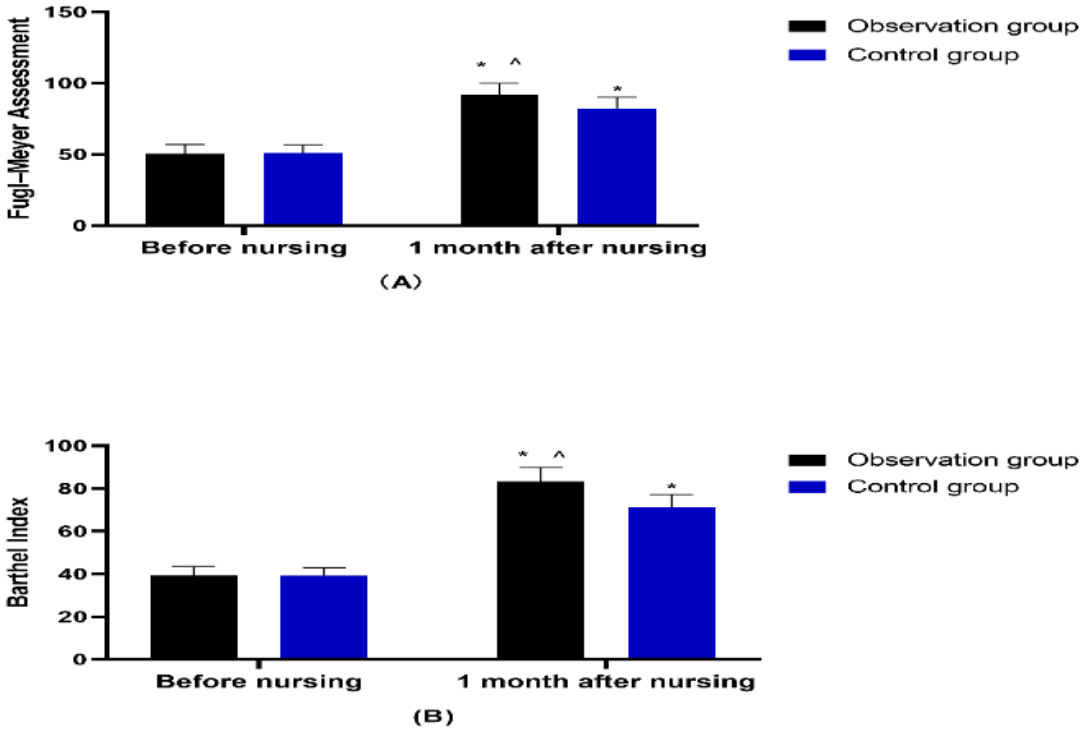

Figure 2. **Limb function**

(A) One month after nursing, the FMA scores in both groups increased, and the score in the observation group was significantly higher than that in the control group (P<0.05). (B) One month after nursing, the BI scores in both groups increased, and the score in the observation group was significantly higher than that in the control group (P<0.05). Note: * indicates P<0.05 compared with before nursing. ^ indicates P<0.05 compared with the control group.

2.4 Comparison of neurological function and mental health

(1) Neurological function

Before nursing and 1 month after nursing, NIHSS scores in the observation group were (70.35±5.66) and (35.73±4.66), respectively, while the scores in the control group were (70.79±5.43) and (47.32±4.67), respectively. One month after nursing, the NIHSS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). Before nursing and 1 month after nursing, SSS scores in the observation group were (26.45±3.29) and (11.66±1.45), respectively, while the scores in the control group were (26.21±3.13) and (20.23±0.86), respectively. One month after nursing, the SSS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). See Figure 3 for details.

Figure 3

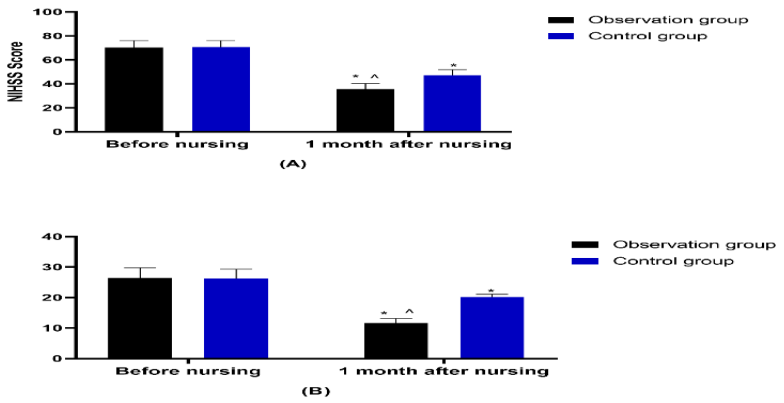

Figure 3. **Neurological function**

(A) One month after nursing, the NIHSS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). (B) One month after nursing, the SSS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). Note: * indicates P<0.05 compared with before nursing. ^ indicates P<0.05 compared with the control group.

(2) Mental health

Before nursing and 1 month after nursing, SAS scores in the observation group were (67.21±10.54) and (37.27±6.45), respectively, while the scores in the control group were (67.64±10.22) and (53.43±7.36), respectively. One month after nursing, the SAS score in the observation group was significantly lower than that in the control group (P<0.05). Before nursing and 1 month after nursing, SDS scores in the observation group were (60.13±9.34) and (41.56±5.87), respectively, while the scores in the control group were (60.57±8.96) and (53.47±7.37), respectively. One month after nursing, the SDS score in the observation group was significantly lower than that in the control group (P<0.05). See Figure 4 for details.

Figure 4

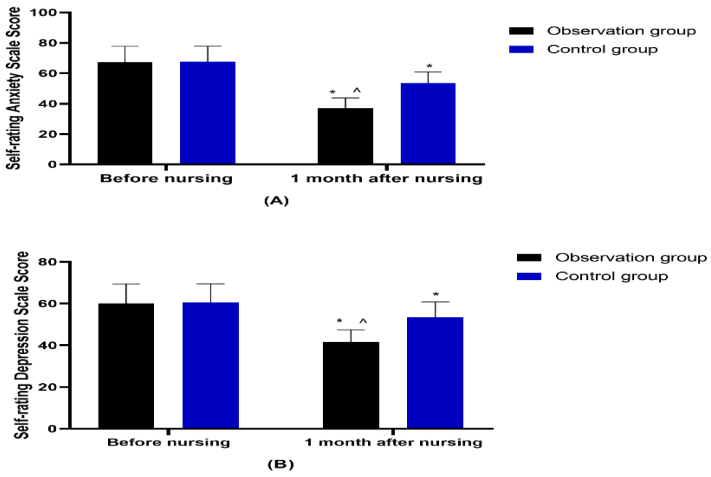

Figure 4. **Mental health**

(A) After nursing, the SAS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). (B) After nursing, the SDS scores in both groups decreased, and the score in the observation group was significantly lower than that in the control group (P<0.05). Note: * indicates P<0.05 compared with before nursing. ^ indicates P<0.05 compared with the control group.

2.5 Comparison of postoperative complications

In the observation group, there were 3 cases (2.50%) of epilepsy, 3 cases (2.50%) of urinary incontinence, 3 cases (2.50%) of dementia after stroke, and 0 case of pulmonary infection, with an incidence of adverse reactions of 7.50%. In the control group, there were 8 cases (10.00%) of

epilepsy, 8 cases (38.00%) of urinary incontinence, 2 cases (2.50%) of dementia after stroke, and 5 cases (6.25%) of pulmonary infection, with an incidence of adverse reactions of 30%. The incidence of postoperative complications in the control group was significantly higher than that in the observation group (P<0.05). See Table 3 for details.

Table 3. **Comparison of incidence of adverse reactions**

Categories	Observation group (n=120)	Control group (n=80)	X^2	P
Epilepsy (%)	3 (2.50)	8 (10.00)		
Urinary incontinence (%)	3 (2.50)	8 (10.00)		
Pulmonary infection (%)	0 (0.00)	5 (6.25)		
Dementia after stroke (%)	3 (2.50)	2 (2.50)		
Incidence of adverse reactions (%)	9 (7.50)	23 (28.75)	16.13	<0.001

2.6 Comparison of total effective rate

In the observation group, 60 cases were markedly effective, 54 cases were effective, and 6 cases were ineffective, with a total effective rate of 95.00%. In the control group, 29 cases were markedly effective, 32 cases were effective, and 19 cases were ineffective, with a total effective rate of 76.25%. The total effective rate in the observation group was higher than that in the control group (P<0.05). See Table 4 for details.

Table 4. **Comparison of total effective rate (n=50)**

Categories	Observation group (n=120)	Control group (n=80)	X^2	P
Markedly effective	60 (50.00)	29 (36.25)	-	-
Effective	54 (45.00)	32 (40.00)	-	-
Ineffective	6 (5.00)	19 (23.75)	-	-
Total effective rate (%)	114 (95.00)	61 (76.25)	7.02	0.008

2.7 Comparison of treatment satisfaction

In the observation group, 87 cases were satisfied, 30 cases were generally satisfied, and 3 cases were dissatisfied, with the satisfaction of 97.50%. In the control group, 40 cases were satisfied, 25 cases were generally satisfied, and 15 cases were dissatisfied, with the satisfaction of 81.25%. The satisfaction in the observation group was significantly higher than that in the control group (P<0.05). See Table 5 for details.

Table 5. **Comparison of satisfaction**

Categories	Observation group (n=120)	Control group (n=80)	X^2	P
Satisfied	87 (72.50)	40 (50.00)	-	-
Generally satisfied	30 (25.00)	25 (31.25)	-	-
Dissatisfied	3 (2.50)	15 (30.00)	-	-
Satisfaction (%)	117 (97.50)	65 (81.25)	15.48	<0.001

3 Discussion

As an intractable disease around the world, CI is extremely easy to cause depression and other mental diseases. Depression after CI hinders patient rehabilitation and recovery, greatly affects patient life, and even seriously increases the mortality rate (de Man-van Ginkel et al.,2013; Hou et al.,2017). Therefore, high-quality nursing methods (such as personalized nursing) after CI are a good pathway to reduce the depression, other complications, and adverse reactions of patients.

According to the scores of neurological function and mental health in this experiment, NIHSS, SSS, SAS, and SDS scores in the observation group were lower than those in the control group. Depression caused by stroke after CI is closely related to the pathological changes of the nervous system. Pathological changes in this system cause patients to become depressed and lose interest in various things, and their physical symptoms go from bad to worse while their psychological symptoms become worse (Zheng et al.,2018). Depression from mild to severe affects activities of daily living, and serious conditions even lead to patient death (Badrin et al.,2017). Personalized nursing attaches great importance to individual integrity, so medical staff need to better understand the characteristics of the

individual patient, and combine the nursing process with the patients themselves, so as to strive to provide the most appropriate nursing services for them(Jian and Liu,2016). Based on the experimental results, personalized nursing was more effective than routine nursing in relieving the patients' depression. The medical staff talked to the patients and then relieved their anxiety, which improved their confidence in recovery, so the SAS and SDS scores in the observation group decreased faster. This indicates that the anxiety and depression of patients in this group are relieved. The reduction of psychological symptoms and the recovery of neurological function have an action and reaction relationship. The NIHSS and SSS scores in the observation group decreased greater, suggesting that the patients' neurological function has a better recovery. The neurological function recovery reveals that the depression of the patients is also relieved. To sum up, personalized nursing can promote the patients' neurological function recovery quickly, so it has an obviously inhibitory effect on depression.

We also analyzed the data of the patients' limb function recovery, and found that the patients in the observation group had better muscle strength recovery, and higher FMA and BI scores. In a clinical study on chronic kidney diseases, personalized nursing is more helpful to the renal function recovery of patients (Castro,2019). According to another study on gallstones, this nursing mode is conducive to improving the therapeutic effect on and promoting the early recovery of patients(Lou, 2017). This demonstrates that personalized nursing is more effective on the postoperative recovery of patients. Based on previous research on neurological function, this nursing method has a better recovery effect on patients' neurological function, and only after the brain function recovers can limbs better recover. In addition, the patients' confidence is also an effective part of recovery, and the conversation with the patients effectively relieves their anxiety and doubts, thereby making them more confident in treatment. Therefore, it is easy to see that personalized nursing promotes limb recovery through neurological function recovery. Due to the better recovery, patients in the observation group had better surgical indications, higher total effective rate and satisfaction, and fewer complications. However, few relevant

inflammatory cytokines were detected in this experiment. Therefore, the detection of some molecular targeted indicators for CI combined with targeted therapy can improve the treatment and nursing of CI patients and better promote their rehabilitation.

In summary, the application of personalized nursing can effectively reduce the depression and anxiety of CI patients, and better promote their limb function recovery, so it is worthy of clinical promotion.

References

[1] Askim T, Bernhardt J, Churilov L and Indredavik B(2016) . The Scandinavian stroke scale is equally as good as The National Institutes of Health Strokssse Scale in identifying 3-month outcome. Journal of rehabilitation medicine; 48: 909-912.DOI: https://doi.org/10.2340/16501977-2155.

[2] Badrin S, Mohamad N, Yunus NA and Zulkifli MM(2017). A Brief Psychotic Episode with Depressive Symptoms in Silent Right Frontal Lobe Infarct. Korean J Fam Med ; 38: 380-382.doi: 10.4082/kjfm.2017.38.6.380.

[3] Castro-Serralde E(2019). Personalized nursing and nutrition counseling to preserve renal function in outpatients with chronic kidney disease. Revista de Enfermería del Instituto Mexicano del Seguro Social ; 27: 33-45.

[4] Chung K, Jeon MJ, Park J, Lee S, Kim CO and Park JY(2018). Development and evaluation of a mobile-optimized daily self-rating depression screening app: A preliminary study. PLoS One ; 13: e0199118.https://doi.org/10.1371/journal.pone.0199118.

[5] Cully JA, Gfeller JD, Heise RA, Ross MJ, Teal CR and Kunik ME(2005). Geriatric depression, medical diagnosis, and functional recovery during acute rehabilitation. Arch Phys Med Rehabil; 86: 2256-2260.https://doi.org/10.1016/j.apmr.2005.07.292.

[6] de Man-van Ginkel JM, Hafsteinsdottir TB, Lindeman E, Ettema RG, Grobbee DE and Schuurmans MJ(2013). In-hospital risk prediction for post-stroke depression: development and validation of the Post-stroke Depression Prediction Scale. Stroke ; 44: 2441-2445.https://doi.org/10.1161/STROKEAHA.111.000304.

[7] Dookie N, Rambaran S, Padayatchi N, Mahomed S and Naidoo K(2018). Evolution of drug

resistance in Mycobacterium tuberculosis: a review on the molecular determinants of resistance and implications for personalized

care. J Antimicrob Chemother ; 73: 1138-1151.https://doi.org/10.1093/jac/dkx506.

[8] Dunstan DA and Scott N(2020). Norms for Zung's Self-rating Anxiety Scale. BMC Psychiatry ; 20: 90.https://doi.org/10.1186/s12888-019-2427-6.

[9] DuPont JJ and Jaffe IZ(2017). 30 YEARS OF THE MINERALOCORTICOID RECEPTOR: The role of the mineralocorticoid receptor in the vasculature. J Endocrinol; 234: T67-T82.DOI: https://doi.org/10.1530/JOE-16-0600.

[10] Ellul P, Boyer L, Groc L, Leboyer M and Fond G(2016). Interleukin-1 beta-targeted treatment strategies in inflammatory depression: toward personalized care. Acta Psychiatr Scand; 134: 469-484.https://doi.org/10.1111/acps.12656.

[11] Fan L, Yeatts SD, Foster LD, Khatri P, Tomsick T, Broderick JP and Palesch YY(2017). Endovascular Therapy Demonstrates Benefit over Intravenous Recombinant Tissue Plasminogen Activator Based on Repeatedly Measured National Institutes of Health Stroke Scale. Interventional neurology , 6: 25-30.https://doi.org/10.1159/000452137.

[12] Gao J, Chen G, He H, Liu C, Xiong X, Li J and Wang J(2017). Therapeutic Effects of Breviscapine in Cardiovascular Diseases: A Review. Front Pharmacol ; 8: 289. https://doi.org/10.3389/fphar.2017.00289.

[13] Han CJ(2016). A concept analysis of personalized health care in nursing. Nursing forum ; 51: 32-39. https://doi.org/10.1111/nuf.12117.

[14] Hellmann MD, Li BT, Chaft JE and Kris MG(2016). Chemotherapy remains an essential element of personalized care for persons with lung cancers. Ann Oncol; 27: 1829-1835.

[15] Hou D, Wang C, Chen Y, Wang W and Du J(2017). Long-range temporal correlations of broadband EEG oscillations for depressed subjects following different hemispheric cerebral infarction. Cogn Neurodyn ; 11: 529-538.https://doi.org/10.1007/s11571-017-9451-3.

[16] Jian JY and Liu Y(2016). The effect of individualized nursing intervention on the treatment and quality of life with elderly chronic obstructive pulmonary disease. China Mod Med ; 51: 530-539. https://doi.org/10.1111/j.1445-5994.1999.tb01621.x.

[17] Kim WS, Cho S, Baek D, Bang H, and Paik NJ(2016). Upper extremity functional evaluation

by Fugl-Meyer assessment scoring using depth-sensing camera in hemiplegic stroke patients. PloS one ; 11: e0158640.https://doi.org/10.1371/journal.pone.0158640.

[18] Lou J(2017). Elderly patients with gallstones were treated with surgery combined with Xiaoyan tablets, based on the patient's health and habits of life, the implementation of personalized nursing intervention. Chinese Journal of Biochemical Pharmaceutics ; 37: 440-442,445.

[19] Lou J(2017). Elderly patients with gallstones were treated with surgery combined with Xiaoyan tablets, based on the patient's health and habits of life, the implementation of personalized nursing intervention[J]. Chinese Journal of Biochemical Pharmaceutics ; 37: 440-442.

[20] Mikkola I, Hagnäs M, Hartsenko J, Kaila M and Winell K(2020). A Personalized Care Plan Is Positively Associated With Better Clinical Outcomes in the Care of Patients With Type 2 Diabetes: A Cross-Sectional Real-Life Study. Canadian Journal of Diabetes ; 44: 133-138.https://doi.org/10.1016/j.jcjd.2019.05.003.

[21] Robinson RG and Jorge RE(2016). Post-Stroke Depression: A Review. Am J Psychiatry; 173: 221-231. https://doi.org/10.1176/appi.ajp.2015.15030363.

[22] Ryg J, Engberg H, Mariadas P, Pedersen SGH, Jorgensen MG, Vinding KL and Andersen-Ranberg K(2018). Barthel index at hospital admission is associated with mortality in geriatric patients: a Danish nationwide population-based cohort study. Clinical epidemiology ; 10: 1789.doi: 10.2147/CLEP.S176035.

[23] Tokunaga S, Tamamizu K, Saiki S, Nakamura M and Yasuda Kl(2017). VirtualCareGiver: Personalized smart elderly care. International Journal of Software Innovation ; 5: 30-43.DOI: 10.4018/IJSI.2017010103.

[24] Tu J, Wang LX, Wen HF, Xu YC and Wang PF(2018). The association of different types of cerebral infarction with post-stroke depression and cognitive impairment. Medicine (Baltimore) ; 97: e10919.doi: 10.1097/MD.0000000000010919.
Wang X, Shen B, Sun D and Cui X(2018). Aspirin ameliorates cerebral infarction through regulation of TLR4/NFkappaBmediated endoplasmic reticulum stress in mouse model. Mol Med Rep ; 17: 479-487.https://doi.org/10.3892/mmr.2017.7879.

[25] Williams LS, Ghose SS and Swindle RW(2004). Depression and other mental health diagnoses increase mortality risk after ischemic stroke. Am J Psychiatry ; 161: 1090-

1095.https://doi.org/10.1176/appi.ajp.161.6.1090.

[26] Zhang J, Wu Y and Gao Z(2019). Correlations of C-Reactive Protein (CRP), Interleukin-6 (IL-6), and Insulin Resistance with Cerebral Infarction in Hypertensive Patients. Med Sci Monit; 25: 1506-1511.doi: 10.12659/MSM.912898.

[27] Zheng YP, Wang FX, Zhao DQ, Wang YQ, Zhao ZW, Wang ZW, Liu J, Wang J and Luan P(2018). Predictive power of abnormal electroencephalogram for post-cerebral infarction depression. Neural Regen Res ; 13: 304-308.doi: 10.4103/1673-5374.213555.