Int J Clin Exp Med 2020;13(4):2466-2473
www.ijcem.com /ISSN:1940-5901/IJCEM0104035

Original Article

Early personalized care in stroke patients improves the cognitive function and promotes the recovery process of disease

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Received October 26, 2019; Accepted November 21, 2019; Epub April 15, 2020; Published April 30, 2020

Abstract: Objective: This study aimed to investigate the effect of early personalized psychological care on cognitive function and self-care ability of stroke patients. Methods: 98 stroke patients admitted to Yantai Hospital of Traditional Chinese Medicine from December 2014 to March 2018 were randomly divided into control group (CG) (n=49) and test group (TG) (n=49). The Hamilton Anxiety Scale (HAMA), Hamilton Depression Scale (HMDS), National Institute of Health stroke scale (NIHSS), Minimum Mental State Examination (MSE), Fufl-Meyer (FMA), Activity of Daily Living (ADL) and nursing satisfaction were compared between the two groups. Results: The NIHSS, HAMA and HMDS scores in TG were significantly lower than those in CG (P<0.05). The FMA scores in TG were significantly higher than that in CG (P<0.05). The MMSE total score of TG (22.98±3.86) was significantly higher than that of CG (19.49±3.04) (P<0.05). After early personalized psychological care, the ADL score of the TG (27.53±3.42) was significantly lower than that of CG (31.35±3.41) (P<0.05). The nursing satisfaction of TG was 89.80%, which was significantly higher than that of CG (73.47%) (P<0.05). Conclusions: Early personalized care in stroke patients can effectively control the negative emotion, enhance the satisfaction with care, improve the cognitive function and life self-care ability and promote the recovery process of disease. It is worthy of being popularized clinically.

Keywords: Early personalized psychological care, stroke, psychological health, cognitive function, self-care ability

Introduction

Stroke is a clinically common acute brain damage disease. Abnormal circulation of blood is caused due to the sudden destruction or blockage of intracerebral vessels. Stroke is divided into ischemic stroke and hemorrhagic stroke. Its mortality and disability rate are high [1-3]. With the advancement of medicine, the morbidity of stroke is decreasing. However, the disability rate is not remarkably improved [4]. In the later stage of stroke, as the patients have no enough confidence in the therapeutic effect and do not understand their own condition, they often suffer from psychological anxiety and depression. These psychological emotions are unfavorable to the recovery of body. Patients lie in bed for a long time due to anxiety and depression until they lose the ability to take care of themselves. Furthermore, serious life obstacles are brought to patients and their relatives. The burden on society and family are aggravated [5, 6]. Study has shown that the early timely personalized psychological care can effectively improve the cognitive function and self-care ability and assist the physical recovery of patients [7, 8]. Therefore, an effective nursing plan to make stroke patients receive treatment in a relatively good state is of great clinical significance to ensure the nursing effect and promote the post-nursing recovery.

Early personalized psychological care is a new effective nursing model based on the conventional clinical psychological care. This method mainly requires that the psychological counseling is given to patients according to the progression of disease and psychological charac-

teristics [9]. While the personalized psychological care is provided, the personalized health education is emphasized. The cognition of disease and nursing methods is strengthened. The stable and friendly relationship between doctors and patients is enhanced. The cooperation degree of patients is increased. Thus, the therapeutic effect and quality of life are improved [10].

Therefore, the effect of early personalized psychological care on psychological health, cognitive function and self-care ability of stroke patients was investigated in this study. Thus, a high-quality nursing plan is sought for stroke patients.

Materials and methods

General information

98 stroke patients admitted to Yantai Hospital of Traditional Chinese Medicine from December 2014 to March 2018 were randomly divided into control group (CG) (n=49) and test group (TG) (n=49), including 50 males and 48 females. The patients were aged 42.18±4.23 in average. Of the total patients, 42 had cerebral infarction and 56 had cerebral hemorrhage. 49 patients receiving conventional nursing intervention were enrolled in CG. The other 49 patients given early personalized psychological care were included in TG. The inclusion criteria were as follows: The patients were diagnosed with stroke by brain CT or MRI [11]. All patients came to the hospital for the first time. The exclusion criteria were shown below: The patients with severe liver, heart, lung and kidney dysfunction; the patients with mental disease; the patients with visual, auditory and speech dysfunction; the patients not cooperating with the study. All patients and families agreed to the study. The informed consent form was signed. The study was approved by the Ethics Committee.

Nursing methods

Conventional psychological care: After admission, the patient's complaint was enthusiastically and patiently listened to. (1) The formation of a psychological counseling mode, namely, more communication with the patient, was noted. A sense of trust was given to the patient. The patient's cognition of his/her own disease and the ability to regulate his/her unhealthy emotion were strengthened. A good hospitalization environment and a stable and harmonious doctor-patient relationship were established. Thus, the patient's active cooperation with nursing was obtained. The patient was encouraged to have a sense of responsibility for personal social roles. Moreover, the patient was helped to gain the courage to overcome disease. (2) Positive and timely guidance was given to the patients after admission for the psychological anxiety and other unhealthy emotions produced by long-term medication or surgery. Corresponding disease knowledge education was provided. Thus, the patients accepted their own disease. Their unhealthy emotions were alleviated. Family and their friends were told to visit the patients properly. Care and patience were given to the patients to let them feel the support from relatives and the warmth from family and society. Thus, a positive treatment attitude was established. (3) Quiet and tidy hospitalization conditions were constructed. The sleep time of patients was guaranteed. (4) The communication between patients was organized regularly. The satisfaction degree and other information during nursing were transmitted from the well recovered patients to the newly admitted patients. Thus, the patients' confidence in treatment was enhanced. (5) Discharge guidance. Discharge medications and disease precautions were told to the patients. Patients were forbidden to stop or change the dosage on their own. It was clearly explained that the doctor was consulted if discomfort occurred. Patients were encouraged to exercise properly and perform social activity. Thus, unhealthy emotions were eliminated.

Early personalized psychological care: Based on the conventional psychological care, early personalized psychological care was added. The detailed care steps were as follows: (1) The patient's living state and behavior were recorded at any time after admission. Anxiety and depression scores were recorded every week. The psychological state was observed and analyzed according to the test results. Health guidance was provided (e.g. listening to their favorite music, talking to friends, properly exercising, etc.). A psychiatrist was asked to guide the nursing treatment if necessary. (2) The medical staff understood the basic information related to the patient. In view of the possible situations

Table 1. General information

	Test group n=49	Control group n=49	X^2/t	P
Gender			0.163	0.686
Male	24 (48.98)	26 (53.06)		
Female	25 (51.02)	23 (46.94)		
Age (years)			0.163	0.686
≤42	26 (53.06)	24 (48.98)		
>42	23 (46.94)	25 (51.02)		
BMI (kg/m^2)			0.377	0.539
≤22	30 (61.22)	27 (55.10)		
>22	19 (38.78)	22 (44.90)		
Marital status			0.400	0.527
Married	33 (67.35)	30 (61.22)		
Divorced/widowed	16 (32.65)	19 (38.78)		
Course of disease (year)	1.34±0.35	1.32±0.34	0.287	0.775
Medical expenses payment method			0.368	0.544
Urban employee medical insurance	27 (55.10)	24 (48.98)		
Urban residents' medical insurance	22 (44.90)	25 (51.02)		
Cultural level			0.041	0.839
Below high school	23 (46.94)	22 (44.90)		
High school and above	26 (53.06)	27 (55.10)		
Stroke type			0.167	0.683
Brain infarction	20 (40.82)	22 (44.90)		
Hemorrhage	29 (59.18)	27 (55.10)		

Table 2. NIHSS scores

Group	Before nursing	After nursing	t	P
Test group n=49	20.45±8.42	10.43±3.43	7.715	<0.001
Control group n=49	20.64±8.24	15.53±4.24	3.860	<0.001
t	0.113	6.546		
P	0.910	<0.001		

Table 3. FMA scores

Group	Before nursing	After nursing	t	P
Test group n=49	32.66±8.35	56.55±14.46	10.020	<0.001
Control group n=49	32.34±8.36	49.57±13.44	7.620	<0.001
t	0.190	2.475		
P	0.850	0.015		

and difficulties in these aspects, coordination scheme was actively formulated. Thus, the psychological burden of patient was eliminated. A stable and harmonious relationship between doctors and patients was established. (3) During treatment, the psychological care was strengthened step by step according to the progression of disease. Attention was mainly paid to the clinical manifestations in the acute phase of disease, such as the unstable vital signs. For the treatment measures, the patients were told to stay in bed and cooperate with the massage rehabilitation therapy first. Care was taken to avoid pressure scores and other complications. Second, the psychological description from patients was listened to with attention. Health education was conducted to change the psychological cognition of disease. Thus, the tension and fear of difficulties were alleviated. During hospitalization, the psychological state of patient was paid attention to irregularly. Communication with the patients was often made to understand the patient's thoughts and attitude. Thus, the patients were helped to establish the confidence in rehabilitation.

Outcome measures

(1) National Institute of Health stroke scale (NIHSS) was used to evaluate the neurological

Table 4. Anxiety and anxiety scores before and after personalized psychological care

	Test group n=49	Control group n=49	t	P
Before nursing HAMA	38.42±4.97	38.45±4.93	0.030	0.976
After nursing HAMA	21.21±4.17	34.85±4.55	15.470	<0.001
Before nursing HMDS	40.43±5.23	40.42±5.24	0.009	0.993
After nursing HMDS	21.94±4.35	35.91±4.84	15.030	<0.001

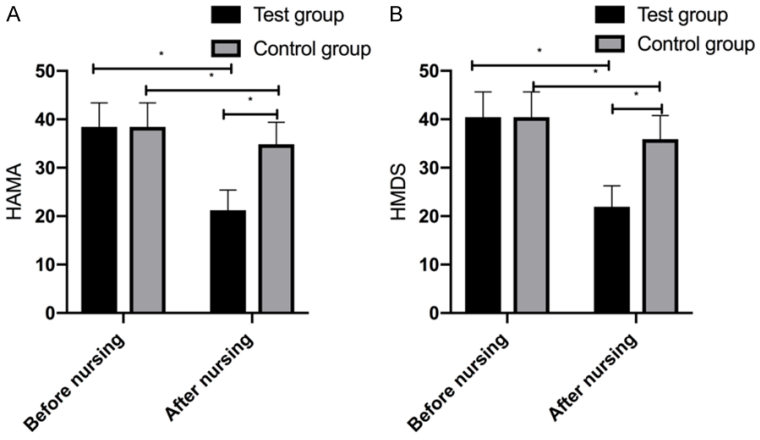

Figure 1. Comparison of anxiety and anxiety score before and after early personalized psychological care. After nursing, the HAMA and HMDS scores of the two groups were lower than those before the nursing. After nursing, the HAMA and HMDS scores of the TG were significantly lower than those of the CG. *represents P<0.05.

function of the two groups after 1 month of nursing. The score was 0-24 points. The scores of mild, moderate and severe neurological deficit were respectively 4~7 points, 8~15 points and ≥15 points [12]. (2) After 1 month of nursing, the limb function was scored with Fufl-Meyer (FMA), including limb movement, balance, sensation, joint range of motion and pain. The full mark of each item was one point according to the function. The higher the score was, the better the motion balance function and the recovery of limb function were [13]. (3) After 1 month of nursing, the psychological negative emotions before and after nursing were evaluated with Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HMDS) [14-16]. (4) Neurocognitive function was evaluated with Minimum Mental State Examination (MMSE) [17]. (5) After 1 month of nursing, the activity of daily living (ADL) scale was used to evaluate the self-care ability of patients. It was divided into 5 grades according to the degree of living ability recovery. Grade I: complete recovery of living ability. Grade II: partial recovery of living ability. Grade III: walking with a stick and help was needed in life. Grade IV: patient stayed in bed for a long time while fully conscious. Grade V: in a vegetative state [18]. (6) The nursing satisfaction evaluations were collected through the questionnaire survey. It was divided into three conditions: very satisfied, satisfied and dissatisfied [19].

Statistical method

In this study, the data were statistically analyzed with SPSS 19.0 (International Business Machines Corporation). The enumeration data were analyzed with Chi-square. The figures were plotted with Graphpad Prism8. P<0.05 implied significant difference.

Results

Comparison of general information

There was no difference in gender, age, course of disease, etc. between the two groups (P>0.05) (**Table 1**).

NIHSS score

After nursing, the NIHSS in TG was significantly lower than that in CG (P<0.05) (**Table 2**).

FMA score

After nursing, the FMA score in TG was significantly higher than that in CG (P<0.05) (**Table 3**).

Anxiety and anxiety score before and after early personalized psychological care

Before nursing, there were no significant differences in HAMA and HMDS scores between the two groups (P>0.05). After nursing, the HAMA and HMDS scores of the two groups were lower than those before the nursing. The HAMA and HMDS scores of the TG were significantly lower than those of the CG (P <0.05) (**Table 4**; **Figure 1**).

Table 5. MMSE scores of early personalized psychological care

Group	Orientation	Memory	Attention and computational power	Recall ability	language skills	Total score
Test group n=49	8.42±1.33	2.03±0.15	3.18±0.56	1.85±0.48	7.50±1.34	22.98±3.86
Control group n=49	7.74±0.92	1.68±0.18	2.27±0.28	1.38±0.42	6.42±1.24	19.49±3.04
t	2.943	10.460	10.170	5.158	4.141	4.972
P	0.004	<0.001	<0.001	<0.001	<0.001	<0.001

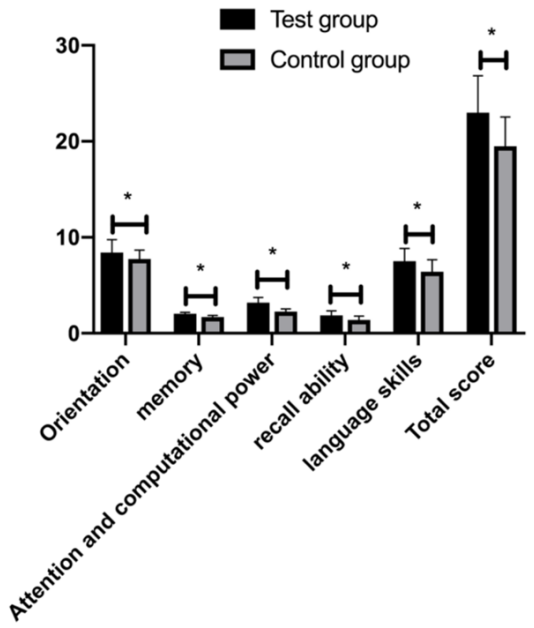

Figure 2. Comparison of MMSE score. After nursing, the total score of MMSE in TG was significantly higher than that in CG. *represents P<0.05.

MMSE score

After nursing, the total score of MMSE in TG was significantly higher than that in CG (P<0.05) (**Table 5**; **Figure 2**).

ADL score

After nursing, the ADL score in TG was significantly higher than that in CG (P<0.05) (**Table 6**; **Figure 3**).

Comparison of nursing satisfaction

The number of subjects very satisfied, satisfied and not satisfied in TG were 31, 13 and 5, respectively. While those in CG were 29, 12 and 8, respectively. The nursing satisfaction in TG was 89.80% and higher than 73.47% in CG (P<0.05) (**Table 7**).

Discussion

Stroke has a very high morbidity rate in cerebrovascular diseases. The physique of patients with chronic diseases, such as hypertension and coronary heart disease, plays a certain role in regulating the pathogenesis of stroke [20]. At present, the treatment of stroke mainly includes drugs and rapid removal of brain hematomas. Although it has a certain therapeutic and alleviation effect, most patients will have disabled limbs, cognitive function decline, poor self-care ability and other symptoms after treatment. Great influence is brought to the life and psychology of patients. It is not conducive to the recovery of stroke patients [21, 22]. During early personalized psychological care, the mental, psychological and physiological aspects of patients are mainly adjusted. The psychological discomfort is eliminated. The overall quality of treatment is improved [23]. Personalized psychological care is carried out. Wrong ideas and behaviors of patients are corrected through early effective doctor-patient communication. Cooperation with the health knowledge education of patients and their families is performed. The problem of patients' negative attitude towards rehabilitation treatment is solved. Thus, the motor function and activity of daily living is improved [24]. As a series of problems exposed during treatment of stroke patients must be solved, appropriate nursing plan is needed. Therefore, the effect of early personalized psychological care during stroke rehabilitation therapy on limb, cognitive function and self-care ability after treatment of disease was analyzed in this study.

During the early personalized psychological care in stroke patients, a nursing plan for the psychology and physiology was developed. Enthusiastic caring was given to patients. Corresponding psychological counseling is provided to solve various psychological problems during treatment. After discharge, various ways

Table 6. ADL scores after early personalized psychological care

Group	Before nursing	After nursing	t	P
Test group n=49	27.53±3.42	33.53±3.52	8.558	<0.001
Control group n=49	27.56±3.51	30.35±3.41	3.991	<0.001
t	0.043	4.542		
P	0.966	<0.001		

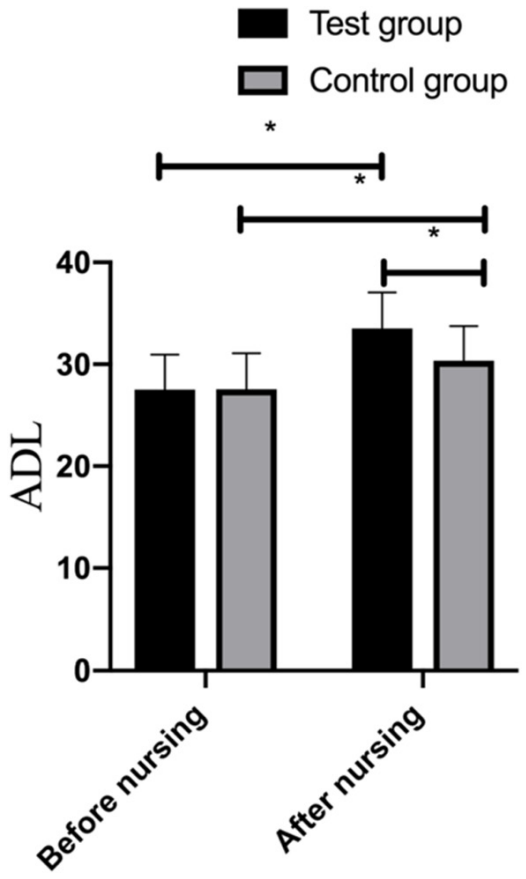

Figure 3. Comparison of ADL score. After nursing, the ADL scores of the two groups were lower than those before the nursing. After nursing, the ADL score of the TG was significantly lower than that of the control group. *represents P<0.05.

were adopted to understand the recovery of patients. The problems occurring after discharge were timely and patiently solved. The study results also showed that the NIHSS scores in neurological function deficit and limb function in TG were lower than those in CG (P<0.05). The FMA score in TG was higher than that in CG (P<0.05). It indicated that the repair effect of early personalized psychological care on neurological function and limb function of stroke patients was good. The HAMA and HMDS scores in unhealthy psychological mood in TG were lower than those in CG (P<0.05). Studies have shown [25, 26] that accurate analysis of psychological state and targeted nursing intervention are of great significance for improving symptoms and controlling diseases. Psychological symptoms and emotional disorders may be accompanied by obvious cognitive and nerve injury. The different severity of cognition and motor symptoms is usually related to the decrease in mood state. In terms of cognitive and self-care ability, the total MMSE score and ADL score in TG were higher than those in CG (P<0.05). Study has shown [27] that post-stroke depression is a common complication of stroke. Depression can restrict the recovery of limb function and the improvement of cognitive function. As a result, fatality rate is increased. Study also has shown [28] that most of the patients with stroke cannot take care of themselves due to staying long in bed. Their daily life needs the help and care from their families. Other studies have shown [9, 29] that personalized psychological care can effectively improve the cognitive ability and self-care ability by alleviating the unhealthy psychological mood of patients. The nursing satisfaction rate in TG was higher than that in CG (P<0.05). It indicated that early personalized psychological nursing can bring better medical experience to patients compared with conventional psychological care. Thus, the patients were helped to more comfortably and cooperatively resist diseases.

In summary, early personalized psychological care treatment can significantly and effectively alleviate the psychological mood of stroke patients. It is of great help to improve the nerve, limb function and cognitive and self-care ability of patients. Meanwhile, the pain and discomfort can be alleviated. The application is worth popularizing clinically. However, there are still some limitations in this study. Such as, many factors have influence on cognitive function of stroke. The effects of environmental care in different hospital on cognitive function recovery can be specifically analyzed. Thus, better care for stroke patients can help the prognosis.

Table 7. Comparison of nursing satisfaction between the two groups of patients

Satisfaction level	Test group n=49	Control group n=49	X^2	P
Very satisfied	31 (63.27)	27 (55.10)	-	-
Satisfied	13 (26.53)	9 (18.37)	-	-
Not satisfied	5 (10.20)	13 (26.53)	-	-
Nursing satisfaction rate	44 (89.80)	36 (73.47)	4.356	0.037

Disclosure of conflict of interest

None.

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