

## Original Article

# Effect of high-quality nursing on negative psychological moods and quality of life of elderly patients with hypertension

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**Abstract:** Objective: This study was designed to determine the effect of high-quality nursing on negative psychological moods and quality of life of elderly patients with hypertension. Methods: In this prospective research, 89 hypertensive elderly patients were divided via random number table method, into a control group (n=44) with routine basic nursing and a research group (n=45) with high-quality nursing. The two groups were compared with respect to psychological status, quality of life, self-management ability and blood pressure control, as well as medication compliance and complications, before and after intervention. Results: Scores of Hamilton anxiety scale (HAMA) and Hamilton depression scale (HAMD) decreased in both groups after intervention, and the reduction was more significant in the research group (both  $P < 0.05$ ). After intervention, scores of various dimensions of generic quality of life inventory-74 (GQOLI-74), self-management ability and Morisky medication compliance scale (MMAS) increased in both groups, and the increase was more evident in the research group (all  $P < 0.05$ ). Systolic blood pressure (SBP) and diastolic blood pressure (DBP) decreased in both groups after intervention, with lower parameters in the research group (both  $P < 0.05$ ). The total incidence of complications in the research group was lower than that in the control group ( $P < 0.05$ ). Conclusion: High-quality nursing for elderly hypertensive patients can significantly relieve their negative emotions and improve their quality of life, with a low incidence of complications.

**Keywords:** Hypertension, high-quality nursing, negative psychological mood, quality of life

## Introduction

Hypertension is one of the most common chronic diseases in clinical practice, which mostly occurs in middle-aged and elderly patients. According to the Chinese guidelines for the Prevention and Treatment of Hypertension revised in 2018, the prevalence rate of hypertension among residents aged 18 and above in China was 27.9% in 2015, and increased to 37.8% in 2018 [1]. Research has shown that, excluding other factors, hypertension is an independent risk factor for cardiovascular disease (CVD), and the risk in middle-aged and elderly patients will significantly increase without well-controlled blood pressure [2]. Therefore, taking appropriate intervention measures to control blood pressure level is of great significance to reduce the risk of CVD and improve the quality of life of patients.

Generally, hypertensive patients need long-term or even lifelong medication. However, some patients develop insufficient disease awareness, resulting in reduced compliance with long-term medication, which not only affects the effect of blood pressure control, but also makes patients prone to increased risk of drug resistance and a rebound phenomenon of drug withdrawal [3]. Meanwhile, the psychology of patients can be affected to varying degrees, and an adverse psychological state is extremely unfavorable to blood pressure control. Therefore, while paying attention to blood pressure control, attention also needs to be paid to the influence of psychological state and quality of life of these patients [4].

Centering on patients, high-quality nursing fully implements nursing responsibilities, strengthens basic nursing, improves service quality,

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**Table 1.** Baseline data

Index	Research group (n=45)	Control group (n=44)	$\chi^2/t$	P
Sex			0.542	0.461
Male	29	25		
Female	16	19		
Age (years)	68.8±5.4	69.1±4.8	0.277	0.782
BMI (kg/m <sup>2</sup> )	23.66±3.20	23.10±3.65	0.769	0.444
Course of disease (years)	12.0±3.9	12.3±3.4	0.387	0.700
Hypertension risk grading (n)			0.750	0.687
I	13	12		
II	25	22		
III	7	10		
Type of antihypertensive drug (n)			0.637	0.412
ACEI	21	17		
ARB	15	15		
Calcium antagonists	12	14		
$\beta$ -blocker	10	11		
Central antihypertensive drug	13	10		
Others	7	9		
Combination therapy (n)			0.142	0.706
Double combinations	15	12		
Triple combinations	10	10		
Complication			0.245	0.621
Hyperlipidemia	24	25		
Diabetes	18	15		
Smoking (n)			0.275	0.600
Yes	14	16		
No	31	28		
Drinking (n)			1.112	0.292
Yes	10	6		
No	35	38		

Note: BMI: body mass index; ACEI: angiotension converting enzyme inhibitors; ARB: angiotensin receptor blocker.

and provides patients with “high-quality, efficient, comfortable and reliable” medical services. Such a nursing model has been widely used in many clinical departments such as obstetrics and gynecology, general surgery and cardiology, and has yielded favorable therapeutic effects. For example, relevant studies have found that high-quality nursing can significantly improve the postoperative quality of life of patients undergoing cervical cancer surgery or gastric cancer resection [5, 6]. Mendes et al. showed that high-quality nursing can help improve medication compliance of patients with coronary heart disease, thus improving their cardiac function [7]. For patients with hypertension, high-quality nursing is mainly em-

bodied in life nursing, psychological nursing, dietary and moderate exercise nursing. The purpose of this study is to explore the effects of high-quality nursing on blood pressure control in elderly patients with hypertension, and to analyze its effect on patients’ negative psychological moods and quality of life.

### Materials and methods

#### General information

In this prospective study, 89 elderly patients with hypertension who were treated in the Hospital Affiliated 5 of Nantong University (Taizhou People’s Hospital) from January 2019 to December 2019 were divided into a research group (n=45) and a control group (n=44) using a random number table method. General information of the included patients is shown in **Table 1**. Inclusion criteria: Patients enrolled were aged 65-80 years, and met the diagnostic criteria for hypertension according to Guidelines for the Prevention and Treatment

of Hypertension Chinese revised in 2018 formulated by the Revision Committee of the Guidelines for the Prevention and Treatment of Hypertension, and provided written informed consent [1]. Exclusion criteria: Patients with serious diseases of the heart, liver, brain, kidney or other vital organs; Patients who were unable to complete the questionnaire independently due to cognitive dysfunction; Patients with mental illness; Patients with malignancies; Patients who were engaged in other research projects.

#### Methods

Both groups were treated with antihypertensive drugs. Apart from that, patients in the control

group were given routine basic nursing, such as health education and medication guidance [8]. In addition, they were instructed to quit smoking and limit alcohol consumption, avoid heavy physical labor and monitor blood pressure in real time. Also, they were informed of any possible adverse reactions and countermeasures. All the patients signed the informed consent form for participating in the study. The study has been reviewed and approved by the Medical Ethics Committee of the Affiliated Hospital 5 with Nantong University (Taizhou People's Hospital).

In addition to the basic treatment given to the control group, patients in the research group were given high-quality nursing [9, 10]. (1) Life nursing: Due to the decline of elderly patients' self-care ability, the nursing staff provided daily life care to patients with low living ability, so as to help them develop good living habits and provide a quiet and comfortable sleeping environment. (2) Psychological nursing: Violent mood swings can lead to increased blood pressure, so the nursing staff took the patient's emotional fluctuations as one of the important observation indicators, and gave targeted psychological counseling to patients with adverse psychological states or violent emotional fluctuations in real time to calm them down and enhance their confidence in treatment. Also, the nursing staff listened patiently to the patient's self-reports, communicated with the patient with gentle words and a kind attitude, so as to gain the patient's trust. (3) Dietary nursing: The digestive and gastrointestinal functions of elderly patients are often declined, so for elderly hypertensive patients, it is necessary to control blood pressure through a reasonable diet and ensure balanced nutrition. Research shows that excessive salt intake for a long time can induce arterial spasmodic contractions causing or exacerbating hypertension [11]. Therefore, patients were instructed to control salt intake, eat more fresh fruits and vegetables on the basis of a low-salt and low-fat diet, and drink more water. In addition, the intake of potassium, calcium and trace elements was ensured, while fat and meat were reduced. (4) Moderate exercise: Patients were guided to perform appropriate physical exercise such as brisk walking, jogging, and Tai Chi. The exercise was conducted 2-3 times a week for 30-60 min/time, but all under the premise

that the patient can tolerate the exercise. The intervention effect was assessed 3 months later.

### *Outcome measures*

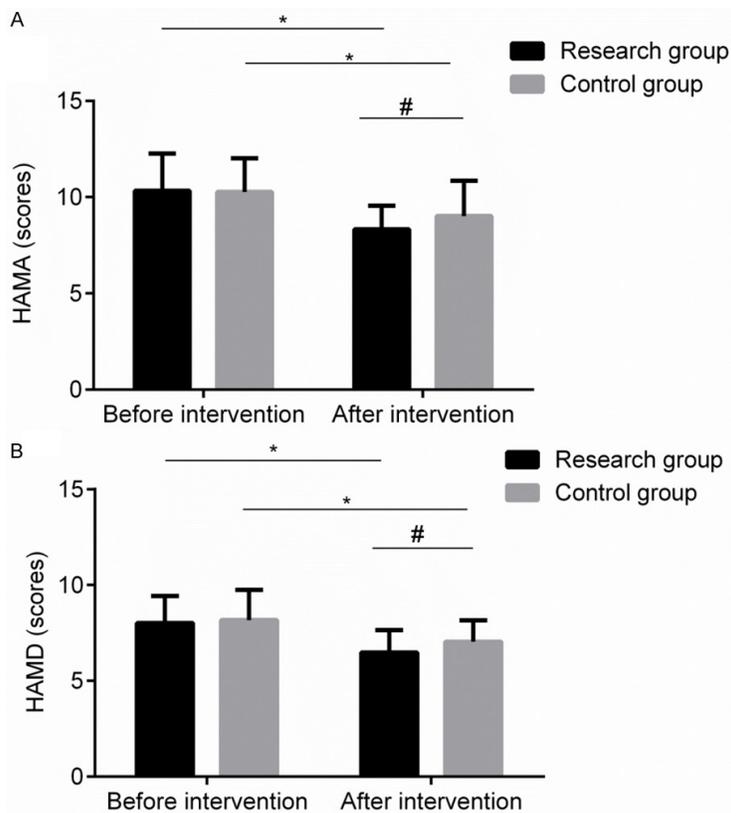
*Primary outcome measures:* Patients were asked to come to the hospital for reexamination 3 months after intervention. The relevant evaluation forms, which were filled in by the patient at the time of admission (before intervention) and during the reexamination (3 months after intervention), were recalled on the spot; for patients who could not return on schedule, the forms were filled out by the nursing staff through telephone follow-up.

(1) Anxiety and depression of patients were evaluated by the Hamilton anxiety scale (HAM-A) and Hamilton depression scale (HAMD) respectively [12, 13]. The degree of anxiety and depression increased as the score increased.

(2) Generic quality of life inventory-74 (GQOLI-74), which included four dimensions of social function, physical function, psychological function and material life, was used to evaluate the quality of life of patients [14]. The score of material life was 16-80 points, and the other three dimensions had a score of 20-100 points. The higher the score, the better the quality of life.

*Secondary outcome measures:* (1) Self-management ability of patients was evaluated using the hypertension-dedicated hypertension self-management ability assessment form, which included five dimensions of diet management, lifestyle management, treatment management, exercise management and risk factor management [15]. On a 5-25 point scale, the score was in direct proportion to the self-management ability of patients.

(2) Systolic blood pressure (SBP) and diastolic blood pressure (DBP) of patients in the two groups were measured 1 hour after awakening in the morning by the cuff compression method with an Omron sphygmomanometer (Shanghai Sanwai Medical Equipment Co., Ltd., model: HBP-9021, origin: China). The patients were required to measure at rest or rested for at least 30 min after exercise. The blood pressure was measured repeatedly 3 times and the mean value was obtained, in order to compare



**Figure 1.** Comparison of the scores of HAMA and HAMD before and after intervention. A: HAMA scores; B: HAMD scores. Compared with before intervention, \*P<0.05; compared with control group, #P<0.05. HAMA: Hamilton anxiety scale; HAMD: Hamilton depression scale.

the blood pressure control at admission and 3 months after intervention.

(3) Medication compliance of patients was evaluated by the Morisky medication compliance scale (MMAS), with a total score of 8 points [16]. The higher the score, the better the compliance.

(4) The patients were followed up for 6 months to compare the complications during drug administration between the two groups.

*Statistical analysis*

SPSS 20.0 was used for statistical analyses of the collected data. The counting data were expressed as cases/percentages (n/%), and analyzed by  $\chi^2$  test or fisher exact probability method. Kolmogorov-Smirnov test was used for normality test, and the measurement data conforming to normal distribution was represented by mean  $\pm$  standard deviation ( $\bar{x} \pm sd$ ). Paired t test was used for intra-group compari-

sons before and after intervention, and independent t test was applied for inter-group comparisons. P<0.05 was considered statistically significant.

**Results**

*Baseline data*

There was no significant difference in general baseline data between the two groups (P>0.05), indicating group comparability (Table 1).

*HAMA and HAMD scores*

HAMA and HAMD scores were reduced in both groups after intervention, but the deduction was more significant in the research group (both P<0.05; Figure 1).

*GQOLI-74 scores*

After intervention, the scores of all dimensions of GQOLI-74 increased in both groups, but the scores were higher in the research group (all P<0.05; Table 2).

*Self-management ability and medication compliance*

Scores of self-management ability and MMAS increased in both groups after intervention, and the increase was more evident in the research group (both P<0.05; Table 3).

*Blood pressure control*

After intervention, SBP and DBP were decreased in both groups, but were lower in the research group as compared to the control group (both P<0.05; Table 4).

*Complications*

During the 6-month follow-up, there were no serious complications in the research group, while there were 2 cases of hypertensive coronary heart disease and 2 cases of cerebral hemorrhage in the control group. The results showed that the total complication rate in the

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**Table 2.** Comparison of GQOLI-74 scores before and after intervention ( $\bar{x} \pm sd$ , scores)

Group	Social function	Physical function	Psychological function	Material life
Research group (n=45)				
Before intervention	70.06±4.40	72.28±5.40	73.30±4.30	60.50±4.50
After intervention	76.50±5.29* <sup>#</sup>	77.78±5.82* <sup>#</sup>	78.88±5.22* <sup>#</sup>	67.78±4.81* <sup>#</sup>
Control group (n=44)				
Before intervention	70.48±4.93	72.69±5.32	73.64±5.04	61.29±4.94
After intervention	74.20±4.30*	74.96±4.07*	75.86±4.69*	64.45±4.36*

Note: Compared with before intervention, \*P<0.05; compared with control group, <sup>#</sup>P<0.05.

**Table 3.** Comparison of self-management ability and medication compliance before and after intervention ( $\bar{x} \pm sd$ , scores)

Group	Self-management ability	MMAS scores
Research group (n=45)		
Before intervention	16.77±3.20	5.04±1.10
After intervention	20.10±3.12* <sup>#</sup>	7.12±0.92* <sup>#</sup>
Control group (n=44)		
Before intervention	16.52±3.65	5.13±1.05
After intervention	18.63±3.20*	6.07±1.10*

Note: Compared with before intervention, \*P<0.05; compared with control group, <sup>#</sup>P<0.05. MMAS: Morisky medication compliance scale.

**Table 4.** Comparison of blood pressure control before and after intervention ( $\bar{x} \pm sd$ , mmHg)

Group	SBP	DBP
Research group (n=45)		
Before intervention	159.30±8.09	126.50±7.50
After intervention	131.20±7.80* <sup>#</sup>	112.29±5.40* <sup>#</sup>
Control group (n=44)		
Before intervention	160.04±9.66	127.09±7.39
After intervention	140.04±7.40*	118.28±5.06*

Note: Compared with before intervention, \*P<0.05; compared with control group, <sup>#</sup>P<0.05. SBP: systolic blood pressure; DBP: diastolic blood pressure.

**Table 5.** Comparison of complications before and after intervention (n, %)

Group	Hypertensive coronary heart disease	Cerebral hemorrhage	Total complication rate
Research group (n=45)	0 (0.00)	0 (0.00)	0 (0.00)
Control group (n=44)	2 (4.55)	2 (4.55)	4 (9.09)
$\chi^2$			4.283
P	0.465	0.465	0.038

research group was lower than that in the control group (P<0.05; **Table 5**).

## Discussion

In this study, HAMA and HAMD scores in the research group were found to be lower than those in the control group after intervention, suggesting that high-quality nursing can help relieve the unhealthy psychological state of elderly hypertensive patients. There is increasing evidence of a positive correlation between anxiety and hypertension [17-19]. For instance, Liu et al. showed that after 1-2 years of psychological counseling, the psychological state, mental state and physical symptoms of patients with hypertension were significantly improved, and that long-term psychological intervention can be used as an adjuvant therapy for hypertensive patients in China's workforce, which can help control blood pressure and reduce the prevalence of stroke [20].

In addition, the self-management ability and MMAS scores, as well as the scores of all dimensions of GQOLI-74 were observed to be higher in the research group than in the control group after intervention, suggesting that while enhancing the self-management ability and medication compliance of elderly hypertensive patients, high-quality nursing also contributes to the improvement of patients' quality of life. Hypertension is a chronic disease that requires long-term or lifelong medication. This is especially true for elderly hypertensive patients when body func-

tions and memory may have declined, with insufficient awareness of self-management; all of which can significantly reduce medication compliance and treatment efficacy, leading to unsatisfactory blood pressure control, further reducing the quality of life and forming a vicious circle [21]. Therefore, enhancing the self-management ability and medication compliance of patients is of paramount importance for the treatment of hypertension in the elderly. Qu et al. surveyed 586 patients with hypertension and found that 393 (67.1%) had poor blood pressure control; however, the proportion of patients with poor blood pressure control decreased significantly (45.1%) after the intervention of individual and family self-management. Therefore, this implied that individual and family self-management is helpful to enhance the effect of blood pressure control [22]. In addition, Zhang et al. studied the application effect of community-based hypertension self-management in patients with hypertension, and found that the self-management ability of patients was significantly improved after the implementation of hypertension self-management, especially in the aspects of medication compliance, diet adjustment, daily activities and smoking [23]. Park et al. believed that medication compliance was closely related to an improved quality of life of elderly hypertensive patients, and pointed out that in addition to health education and proper exercise, attention should be paid to improving patients' medication compliance, so as to improve the effect of blood pressure control and thereby improve patients' life quality [24]. As well, the study by Ye et al. showed that continuous high-quality nursing intervention was conducive to improving the quality of life of adult hypertensive patients, which is consistent with the results of this study [25].

Finally, we compared the blood pressure control and the occurrence of complications between the two groups. The research group exhibited significantly better effect of blood pressure control than the control group, with no serious complications, suggesting that while reducing the incidence of complications, high-quality nursing was beneficial to blood pressure control in elderly patients with hypertension. The research by Li et al. also pointed out that on the basis of drug therapy, a high-quality and appropriate nursing concept could help

enhance the control level of hypertension and reduce the incidence of complications such as stroke (0.88% vs. 2.03%) [26]. However, as this study is from a single-center with a small sample size and short follow-up time, and it is still necessary to expand the sample size in the later stages and conduct a multi-center, large-sample randomized controlled study to confirm the application effect of high-quality nursing in elderly patients with hypertension.

To sum up, high-quality nursing for elderly patients with hypertension can significantly alleviate their negative emotions, enhance their self-management ability and medication compliance, thus improving their quality of life and lower the risk of complications.

### Disclosure of conflict of interest

None.

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