

## Effects of positive psychological intervention on Parkinson's disease patients complicated with depression and cognitive dysfunction

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### ABSTRACT

**Objective:** We aimed to evaluate the effects of positive psychological intervention on Parkinson's disease (PD) patients complicated with depression and cognitive dysfunction. **Methods:** Two hundred and thirty-two PD patients complicated with depression and cognitive dysfunction treated in our hospital were selected and randomly divided into two groups (n=116). The control group was treated routinely and the observation group was additionally subjected to positive psychological intervention for eight consecutive weeks. They were evaluated by the Hamilton Depression Rating Scale (HAMD) and the Montreal Cognitive Assessment Scale in terms of depression and cognitive dysfunction. The numerical data between groups were compared by the  $\chi^2$  test, and the categorical data were compared by the t test. Changes in the depression and cognitive function scores before and after intervention were compared by analysis of variance for repeated measures.  $P < 0.05$  was considered statistically significant. **Results:** Before intervention, the two groups had similar HAMD and cognitive function scores. After intervention, the HAMD score of the observation group was significantly lower than that of the control group. Compared with the control group, the observation group had significantly higher total score of cognitive function (18.49±3.58 vs. 25.68±2.19), visuospatial executive function (2.18±1.45 vs. 4.53±0.48), attention (3.43±0.77 vs. 5.27±0.58), language ability (2.34±0.59 vs. 2.41±0.49) and orientation (5.16±0.76 vs. 5.98±0.13) scores. **Conclusion:** Positive psychological intervention can effectively relieve the depression and cognitive dysfunction of PD patients, which is of great significance to improvement of the survival and quality of life. (*Anatolian Journal of Psychiatry* 2019; 20(4):412-417)

**Keywords:** cognitive therapy, depression, intervention studies, Parkinson's disease

## Depresyon ve bilişsel işlev bozukluğu ile komplike olmuş Parkinson hastalığı hastalarında pozitif psikolojik müdahalenin etkileri

### ÖZ

**Amaç:** Biz depresyon ve bilişsel işlev bozukluğu ile komplike olmuş Parkinson hastalığı (PH) hastalarında pozitif psikolojik müdahalenin etkilerini değerlendirmeyi amaçladık. **Yöntem:** Araştırmaya hastanemizde tedavi edilen, depresyon ve bilişsel işlev bozukluğu ile komplike olmuş 232 PH hastası alındı ve rastgele iki gruba ayrıldı (s=116). Kontrol grubuna rutin tedavi uygulandı, çalışma grubuna ek olarak ardışık sekiz hafta pozitif psikolojik müdahale yapıldı. Depresyon ve bilişsel işlev bozukluğu Hamilton Depresyon Değerlendirme Ölçeği (HAMD) ve Montreal Bilişsel Değerlendirme Ölçeği ile değerlendirildi. Gruplar arasındaki sayısal veriler  $\chi^2$  testi ile, kategorik veriler t testi ile karşılaştırıldı. Müdahaleden önce ve sonra depresyon ve bilişsel işlev puanlarındaki değişimler yineleyen ölçümlerin varyans analizi ile karşılaştırıldı.  $P < 0.05$  değeri istatistiksel olarak anlamlı kabul edildi. **Sonuçlar:** İki grubun depresyon ve bilişsel işlev puanları müdahaleden önce benzerdi. Müdahaleden sonra çalışma grubunun HAMD

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puanı kontrol grubunun puanından önemli düzeyde daha düşüktü. Kontrol grubuyla karşılaştırıldığında, çalışma grubunun bilişsel işlev toplam puanı ( $18.49\pm 3.58$ 'e karşı  $25.68\pm 2.19$ ), görsel-uzaysal yürütücü işlev puanı ( $2.18\pm 1.45$ 'e karşı  $4.53\pm 0.48$ ), dikkat puanı ( $3.43\pm 0.77$ 'e karşı  $5.27\pm 0.58$ ), dil yeteneği puanı ( $2.34\pm 0.59$ 'e karşı  $2.41\pm 0.49$ ) ve yönelim puanı ( $5.16\pm 0.76$ 'e karşı  $5.98\pm 0.13$ ) önemli düzeyde daha yüksekti. **Tartışma:** Pozitif psikolojik müdahale, PH hastalarında sağkalım ve yaşam kalitesinin iyileşmesinde önemli rolü olan depresyon ve bilişsel işlev bozukluğunu etkin olarak hafifletebilir. (*Anadolu Psikiyatri Derg* 2019; 20(4):412-417)

**Anahtar sözcükler:** Bilişsel terapi, depresyon, müdahale çalışmaları, Parkinson hastalığı

## INTRODUCTION

Parkinson's disease (PD) is a common chronic degenerative disease of the nervous system among middle-aged and elderly people, mainly manifested as resting tremor, bradykinesia, myotonia, postural/gait abnormalities and other motor dysfunctions.<sup>1</sup> Currently, there are approximately 1 million and 2 million PD patients in USA and China respectively.<sup>2</sup> Recently, with aggravated aging of population worldwide, the morbidity rate of PD patients has been increasing annually.<sup>3</sup>

PD is also accompanied by non-motor symptoms such as anxiety, depression, insomnia, cognitive dysfunction, autonomic disorders, constipation and mental disorders,<sup>4</sup> among which depression and cognitive impairment are most common.<sup>5</sup> The symptoms are gradually aggravated with extended disease course.<sup>6,7</sup> PD-related studies have focused on the mitigation of motor symptoms by drugs, but the non-motor ones that cannot be well treated by drugs have not attracted enough attention.<sup>8</sup> Besides, the depression and cognitive dysfunction of PD patients have seldom been treated by psychological intervention, most of which aim to eliminate the negative emotions also.<sup>9</sup> In contrast, the positive quality and power of patients themselves have not been utilized.

Different from negative or traditional psychology, positive psychology intends to improve the quality of life, and to boost the abilities to feel pleasure, responsibility and life meaning.<sup>10,11</sup> It requires an open-minded, appreciative viewpoint to treat human potential, motivation and ability. On the basis of positive psychology, positive psychotherapy motivates the intrinsic actual or potential positive quality and power of patients per se to help them survive an adverse situation, and to establish high-quality personal and social life.<sup>12</sup>

The clinical significance of positive psychotherapy has been widely reported. For instance, Fava and Ruini described the main technical features and characteristics of well-being therapy, a new psychotherapeutic strate-

gy.<sup>13</sup> This therapy was suitable for patients with affective disorders who did not respond to standard psychotherapeutic or pharmacological therapies. Besides, Seligman et al. reported that positive psychotherapy was an effective supplementation for depression treatment by evidently increasing positive engagement, emotion and meaning.<sup>14</sup> In addition; Eryılmaz found that positive psychotherapies were as effective as classical psychotherapies in improving the subjective well-being of individuals.<sup>15-17</sup>

Thereby motivated, we herein designed a positive psychological intervention regimen for PD patients complicated with depression and cognitive dysfunction, and evaluated their depression and cognitive function with the Hamilton Depression Rating Scale (HAMD) and the Montreal Cognitive Assessment (MoCA) Scale before and after this intervention. This study provides a feasible strategy for the psychological nursing of PD patients in clinical practice, and inspires them to fight against PD with a positive mental state.

## METHODS

### Baseline clinical data

The ethics committee of our hospital has approved this study, and written consent has been obtained from all subjects. Two hundred and thirty-two PD patients complicated with depression and cognitive dysfunction treated in our hospital from January 2015 to December 2016 were selected and randomly divided into two groups (n=116). The observation group consisted of 64 males and 52 females aged 50-85 years old, ( $61.41\pm 7.35$ ) on average. The disease courses ranged from 0.5 to 10 years, ( $5.96\pm 3.71$ ) on average. The control group comprised 60 males and 56 females aged 51-84 years old, ( $61.82\pm 8.13$ ) on average. The disease courses ranged from 0.5 to 10 years, ( $6.04\pm 3.73$ ) on average. Before treatment, the two groups had similar baseline clinical data ( $p>0.05$ ).

Inclusion criteria: 1) in accordance with the diagnostic criteria stipulated by the Chinese Parkinson's Disease & Movement Disorders Society, Neurology Branch of Chinese Medical Association  
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tion in 2006,<sup>18</sup> 2) with consciousness and ability to participate, 3) voluntary to participate. Exclusion criteria: 1) with Parkinsonism induced by cerebrovascular diseases, encephalitis, poisoning, trauma and drugs, 2) with other diseases that may induce depression or cognitive dysfunction, 3) patients complicated with severe cardiac, hepatic and renal diseases, 4) patients unable to communicate due to severe symptoms.

### Treatment methods

Both groups were given routine antidepressive therapy using 5-hydroxytryptamine reuptake inhibitor fluoxetine (Shanxi C & Y Pharmaceutical Group Co., Ltd., China; SFDA approval number: H2007398). With the dose of 20 mg, they were administered every morning for two weeks. On this basis, the observation group was subjected to positive psychological intervention by a professional panel consisting of experienced clinical psychologists, neurologists and PhD in psychology who had received systematic training of positive psychology and passed assessment test. The intervention regimen mainly included: 1) recording three things that were most worthy of gratitude every night before going to sleep; 2) finding out the advantages of patients per se, 3) appreciating ordinary happiness from trifles in the past, 4) drafting autobiographies and sharing them with other patients, 5) expelling negative emotions by seeking feelings of happiness. The observation group received intervention twice each week, 30 min each time. Both groups were treated for eight consecutive weeks.

Afterwards, all patients were continuously followed up twice a week for eight weeks to reevaluate the study results, and those who were discharged from hospital were followed up by telephone call or home visiting.

### Hamilton Depression Rating Scale (HAMD):

Hamilton first published HAMD in 1960. Consisting of 24 items, the scale includes seven types of factors: anxiety/somatic symptoms, body weight, cognitive disorder, diurnal variation, retardation, sleep disorder and feelings of despair. Assessment criteria is following: Total score >35 points, severe depression; 21-35 points, mild to moderate depression; 8-20 points, possible depression; <8 points, normal. This scale has high validity and reliability, with the reliability coefficient of 0.927 and the retest reliability coefficient of 0.985.<sup>19</sup>

### Montreal Cognitive Assessment (MoCA)

**Scale:** MoCA Scale includes 12 questions involving 7 dimensions, i.e. visuospatial executive function, identification, attention, language, recall, abstraction and orientation. The total score is 30 points, and the score  $\leq 26$  points means normal, with a higher score suggesting a better cognitive function. The bias of educational level is corrected by adding 1 point for the patients receiving education for  $\geq 12$  years. It has a test time of 10-20 minutes. This scale has the sensitivity of 0.92, the specificity of 0.84 and the retest reliability coefficient of 0.857.<sup>20</sup>

### Investigation methods

The two groups were investigated by questionnaires. Before investigation, they were informed of the aim and significance of this study as well as the method to fill in these questionnaires.

### Statistical analysis

The investigation data of patients were used as the baseline data, and those after intervention were input in Epidata3.1. These data were linked according to the numbering of patients. Data verification and quality control during investigation were conducted by the same method. All data were then transferred to SPSS19.0. The numerical data between groups were compared by the  $\chi^2$  test, and the categorical data were compared by the t test. Changes in the depression and cognitive function scores before and after intervention were compared by analysis of variance for repeated measures.  $P < 0.05$  was considered statistically significant.

## RESULTS

### HAMD scores before and after intervention

Before intervention, the two groups had similar HAMD scores ( $p > 0.05$ ). After intervention, the HAMD score of the observation group was significantly lower than that of the control group ( $p < 0.05$ ) (Figure 1), indicating that positive psychological intervention better relieved depression.

### Scores of cognitive function before and after intervention

Before intervention, the two groups had similar cognitive function scores ( $p > 0.05$ ). After intervention, compared with the control group, the observation group had significantly higher total score of cognitive function ( $18.49 \pm 3.58$  vs.  $25.68 \pm 2.19$ ), visuospatial executive function ( $2.18 \pm 1.45$  vs.  $4.53 \pm 0.48$ ), attention ( $3.43 \pm 0.77$

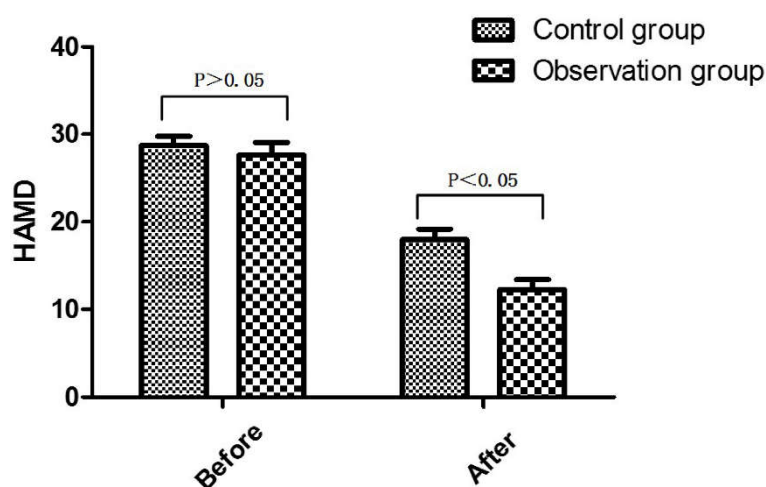


Figure 1. HAMD scores before and after intervention

Table 1. Scores of cognitive function before and after intervention

Item	Control group (n=116)		Observation group (n=116)		$t/\chi^2$		p	
	Before	After	Before	After	Before	After	Before	After
MoCA scale score	20.15±3.82	18.49±3.58	20.68±3.79	25.68±2.19	0.071	6.780	0.944	0.001
Visuospatial executive function	2.81±0.41	2.18±1.45	2.75±0.48	4.53±0.48	0.267	5.289	0.790	0.001
Identification	2.34±0.21	2.24±0.29	2.32±0.23	2.56±0.33	0.141	2.083	0.889	0.045
Attention	3.93±0.71	3.43±0.77	4.01±0.68	5.27±0.58	0.384	8.112	0.701	0.001
Language ability	3.94±0.52	2.34±0.59	3.91±0.49	2.41±0.49	0.286	2.145	0.775	0.043
Abstraction	1.14±0.31	1.18±0.32	1.19±0.32	1.49±0.41	0.081	1.196	0.936	0.482
Delayed recall	2.59±1.38	3.19±1.38	2.59±1.29	3.59±1.19	0.251	1.572	0.803	0.158
Orientation	5.14±0.46	5.16±0.76	5.18±0.43	5.98±0.13	0.283	2.143	0.777	0.029

vs. 5.27±0.58), language ability (2.34±0.59 vs. 2.41±0.49) and orientation (5.16±0.76 vs. 5.98±0.13) scores ( $p < 0.05$ ) (Table 1). Therefore, positive psychological intervention indeed improved cognitive function.

## DISCUSSION

PD is a common degenerative disease of the nervous system mainly threatening the elderly, with the average onset age of about 60 years old.<sup>21</sup> It is mainly manifested as motor dysfunction such as resting tremor, bradykinesia, myotony and abnormal posture and gait, together with non-motor symptoms such as depression, anxiety, sleep disturbance and cognitive dysfunction, of which depression and cognitive dysfunction are most common.<sup>22</sup> Moreover, cognitive dysfunction generally becomes more obvious as the depression of PD patients is aggravated.<sup>23</sup>

Currently, PD patients are mainly treated by

mitigating clinical symptoms and improving the quality of life.<sup>24</sup> Drug therapies exert no obvious effects on these typical symptoms, so researchers have endeavored to perform psychological interventions to alleviate suffering and to improve the prognosis.<sup>25,26</sup>

In this study, the positive psychological intervention was conducted mainly by recording three things that were most worthy of gratitude every night before going to sleep, finding out the advantages of patients per se, appreciating ordinary happiness from trifles in the past, drafting autobiographies and sharing them with other patients, as well as expelling negative emotions by seeking feelings of happiness. After intervention, the HAMD score of the observation group was significantly lower and cognitive function-related scores were significantly higher than those of the control group, suggesting that the depression and cognitive dysfunction of PD patients were both significantly relieved. Similarly, Xie et al. reported that brief psychotherapy

significantly improved the HAMD and MoCA scale scores of PD patients, probably being effective for managing their depression.<sup>27</sup> A systematic review of Lai et al. showed that positive psychological interventions promoted the well-being of PD patients by improving the quality of life as well as alleviating depressive symptoms and symptomatic distress.<sup>28</sup> Probably, a part of neurons were still capable of regeneration after central nerve injury in these patients, and the positive psychological intervention motivated their potential, activated brain cells, enlarged corresponding cortical representative area, and finally boosted the functions of related positions in the brain.

Furthermore, the positive psychological intervention regimen significantly mitigated the depression of PD patients by allowing them to explore the advantages of themselves and the

meaning of life, motivating the confidence to defeat this disease, unraveling the intrinsic positive power and relieving the psychogenic response to PD. As a result, they conformed more to treatment and nursing, which alleviated the aggravation of motor dysfunction. Possibly, as Fredrickson described, two of ten representative positive emotions, i.e. gratitude and hope, were given rise to by this regimen. He found that positive emotions were beneficial to the clinical prevention and treatment of disorders, particularly anxiety and depression.<sup>29</sup>

In summary, PD patients should be treated both physically and psychologically. Positive psychology-guided intervention effectively mitigated their depression and cognitive dysfunction, providing a novel strategy for clinical PD treatment. Regardless, the underlying mechanism still needs in-depth studies.

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