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Review Article

The positive role of Rosenthal effect-based nursing in quality of life and negative emotions of patien ts with scoliosis

Lihua Ying, Weijun Fu

Department of Spine Surgery, The First People's Hospital of Wenling, Wenling 317500, Zhejiang, China

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Abstract: Objective: To explore the positive role of Rosenthal effect-based nursing in the life quality and negative emotions of patients with scoliosis. Methods: Altogether 64 scoliosis patients in the First People's Hospital of Wenling from August 2017 to July 2019 were enrolled as research subjects; of which 34 patients were nursed under the Rosenthal effect-based nursing mode as the research group, and the rest were nursed under a routine nursing mode as the control group. The stress index changes of both groups before operation were evaluated, and the Hamilton depression rating scale and Hamilton anxiety scale were applied to analyze the changes in the psychological states of patients. Additionally, the visual analog scale was employed to score the pain of patients one day after operation (T1), 3 days after operation (T2), and 7 days after operation (T3). Nursing satisfaction and life quality of the patients were investigated at discharge and 3 months after discharge. Results: Before the operation, the research group showed significantly lower heart rate, systolic blood pressure, and diastolic blood pressure than the control group (all $P<0.05$), and before nursing, there was no significant difference between the two groups in anxiety and depression scores, while after nursing, the research group had significantly lower anxiety and depression scores than the control group (all $P<0.01$). Furthermore, at T1, there was no significant difference between the two groups in pain score ($P>0.05$), while at T2 and T3, the research group scored significantly lower than the control group in pain ($P<0.01$). The research group showed significantly higher nursing satisfaction and life quality than the control group (both $P<0.05$). Conclusion: Rosenthal effect-based nursing can effectively alleviate the negative emotions associated with scoliosis and improve life quality, so it is worthy of clinical application.

Keywords: Rosenthal effect, nursing, scoliosis, life quality, emotion

Introduction

Scoliosis is a common clinical orthopedic disease, derived from a three-dimensional spinal deformity, which is more common in women than men [1]. Idiopathic scoliosis is the most common form [2]. At present, a growing number of investigations on adolescent health problems show that the incidence of adolescent scoliosis is increasing annually [3], which poses a serious impact on the body image, psychology, and daily life of patients. Early scoliosis can be treated conservatively in clinical practice, and severe scoliosis is usually treated through an operation to restore the normal shape of the spine [4, 5]. However, patients are prone to have negative emotions due to the associated pain and other factors, resulting in poor coordination of postoperative rehabilitation and difficulty in achieving the best therapeutic effect; which reduces the quality of life of patients in the future [6].

With high incidence and harmfulness, scoliosis has always been a study focus in clinical practice. In recent years, many scholars have focused their research on improving the psychological state and life quality of patients, and continuous research shows that intervention by relevant nursing methods has a very significant effect on the prognosis of patients with scoliosis [7, 8]. The Rosenthal effect is a kind of expectation effect, also known as pygmalion effect, which was first proposed by the American psychologist Rosenthal. Its main purpose is to make people more confident and have self-

esteem through psychological suggestion methods such as praise and expectation, so that people have positive motivation. It can be seen as a psychological intervention method [9, 10]. Rosenthal effect-based nursing has been widely used in many countries at present, and increasing studies show that it has significant curative effect on patients with heart diseases and depression [11, 12]. However, the application value of Rosenthal effect-based nursing in patients with scoliosis has not yet been identified. We speculated that it also plays a significant role in patients with scoliosis, and we carried out relevant experiments to analyze this; aiming to provide effective references and guidance for future clinical treatment and nursing of patients with scoliosis.

Materials and methods

General materials

A total of 64 patients with scoliosis admitted to the First People's Hospital of Wenling from August 2017 to July 2019 were enrolled as research subjects, including 26 males and 38 females, between 5 and 16 years old. Thirty-four patients were nursed under the Rosenthal effect-based nursing mode during hospitalization as a research group, and the rest were nursed under the routine nursing mode during hospitalization as a control group. This study was approved by the Ethics Committee of the First People's Hospital of Wenling, and all research subjects signed informed consent forms after understanding the nursing content.

Inclusion and exclusion criteria

The inclusion criteria of the study: Patients meeting the diagnostic guidelines for scoliosis [13], and those who had received scoliosis surgery in the First People's Hospital of Wenling after diagnosis. The exclusion criteria of the study: Patients who cannot tolerate surgery, patients with mental disease who cannot cooperate with treatment and nursing, patients com-promised with other diseases, patients allergic to drugs, patients with poor treatment compliance, and those transferred to the First People's Hospital of Wenling.

Methods

All patients were given surgical correction after admission by senior surgeons in the First People's Hospital of Wenling, and then continuously given relevant rehabilitation treatment in the First People's Hospital of Wenling after operation. Patients in the control group were given routine nursing during treatment, including monitoring the changes of their vital signs, giving some simple health education along with guidance and assisting them to complete rehabilitation exercises. Patients in the research group were given Rosenthal effect-based nursing during treatment as follows: 1. A Rosenthal effect-based nursing group was established, and psychology experts were invited to train the group members to ensure that the group members can comprehensively evaluate the psychological state of patients with the Rosenthal effect and give corresponding psychological guidance. 2. The nursing staff carried out health education training to family members, and required them to pay attention to the psychological and emotional changes of patients at any time and also participate in the nursing of patients together. 3. The nursing staff were advised to encourage patients in the rehabilitation exercise process, given them positive evaluation, pay attention to their emotional changes, and cooperate with their families to appease the patients appropriately after operation, so that the patients had a positive mentality to face the treatment and exercise in the rehabilitation process. 4. The nursing staff was also instructed to put up funny pictures and posters in the wards, encourage patients to communicate with other patients in the same warm way to help them feel the care from others, and enable patients to establish a positive and objective attitude towards life.

Outcome measures

The changes of stress indices such as heart rate and blood pressure before operation in the two groups were evaluated, and the Hamilton depression rating scale (HAMD) and the Hamilton anxiety scale (HAMA) were applied to analyze the psychological states of patients before nursing and at the time of discharge. In addition, the visual analog scale (VAS) was employed to score the pain of the patients at 1 day after operation (T1), 3 days after operation (T2), and 7 days after operation (T3). A lower VAS score indicated a milder pain. Furthermore, the life quality of the patients at 3 months after discharge was scored through a questionnaire, with a 100-point system, mainly covering physical function, cognitive function, social activity

Table 1. Comparison of clinical data [n (%)]

	The research group (n = 34)	The control group (n = 30)	t or χ^2	*P-value*
Age (Y)	12.62±5.65	13.27±5.72	0.457	0.650
Sex			0.013	0.909
Male	12 (35.29)	11 (36.67)		
Female	22 (64.71)	19 (63.33)		
BMI (kg/m^2)	19.12±2.26	18.95±2.17	0.306	0.761
Disease type			0.059	0.807
Congenital scoliosis	10 (29.41)	8 (26.67)		
Idiopathic scoliosis	24 (70.59)	22 (73.33)		
Site			0.850	0.654
Thoracic segment	10 (29.41)	6 (20.00)		
Lumbar segment	8 (23.53)	7 (23.33)		
Thoracolumbar segment	16 (47.06)	17 (56.67)		
Surgical method			0.011	0.917
Posterior three-dimensional orthopedic bone graft fusion	28 (82.35)	25 (83.33)		
Anterior incision-based orthopedic bone graft fusion	6 (17.65)	5 (16.67)		
Education level			2.876	0.090
With junior high school diploma or below	23 (67.65)	14 (46.67)		
With junior high school diploma or above	11 (32.35)	16 (53.33)		

function, negative emotion (anxiety, etc.), disease recurrence, and pain. A higher score indicated better life quality. The nursing satisfaction of the patients was also investigated. The patients were asked to anonymously fill in a nursing satisfaction questionnaire at the time of discharge. If the patient was too young to fill the questionnaire, one of his/her family members was required to fill it out for the patient. The questionnaire covers satisfaction with the nursing staff, nursing ability evaluation, and self-benefit evaluation, with a hundred-mark system, which uses a score greater than 90 points for verify satisfied, a score between 80 and 90 points for satisfaction, a score between 60 and 79 points for improvement needed, and a score less than 60 points for dissatisfaction. The nursing satisfaction = the number of patients (very satisfied + satisfied with the nursing)/the total number of patients × 100%.

Statistical analysis

In this study, the collected data were analyzed statistically using SPSS 24.0 (Yuchuang Network Technology Co., Ltd., Shanghai, China), and illustrated into figures using GraphPad 5. Enumeration data were expressed as rate, and compared between groups using the chi-square test. Quantitative data were expressed as the mean ± standard deviation, compared between groups using the t test. P<0.05 indicates a significant difference.

Results

Comparison of general data

There was no significant difference between the two groups in clinical data including age, sex, body mass index (BMI), disease type and location, operation method, and educational level (all *P*>0.05), so the two groups were comparable. **Table 1**.

Comparison of preoperative stress response

Comparison of stress indices including heart rate and blood pressure before operation between the two groups revealed that the research group showed significantly lower heart rate, systolic blood pressure, and diastolic blood pressure than the control group (all *P*<0.05). **Table 2**.

Psychological state assessment

Before nursing, there was no significant difference in psychological state scores between the

Table 2. Comparison of preoperative stress response between the two groups before operation

Group	The number of patients	Heart rate (times/min)	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
The research group	34	96.83±6.41	108.46±9.32	73.29±6.85
The control group	30	102.67±7.12	113.55±10.24	77.48±7.10
T		3.453	2.082	2.401
P-value		0.001	0.042	0.019

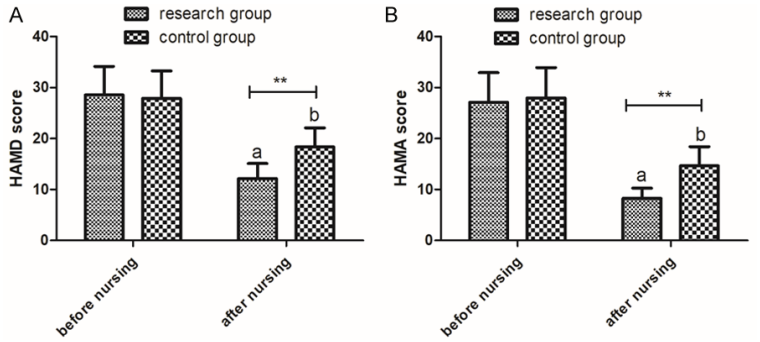

Figure 1. Comparison of psychological state scores between the two groups. A. Comparison of HAMD score. B. Comparison of HAMA scores. ** indicates P<0.01; a indicates *P*<0.01 *vs.* the research group before nursing, and b indicates *P*<0.01 *vs.* the control group before nursing.

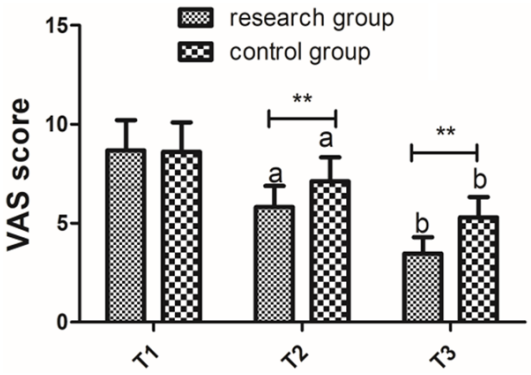

Figure 2. Comparison of VAS score between the two groups at different time points. A indicates *P*<0.01 *vs.* the VAS score at T1; b indicates *P*<0.01 *vs.* the VAS score at T2. ** indicates *P*<0.01.

two groups (all *P*>0.05). While after nursing, both groups had significantly lower HAMD and HAMA scores (both *P*<0.01), and the scores of the research group were significantly lower than those of the control group (both *P*<0.01). **Figure 1**.

Pain score (VAS score) comparison

At T1, there was no significant difference between the two groups in VAS score (*P*>0.05). While at T2 and T3, the VAS score of the research group was significantly lower than that of the control group (*P*< 0.01). The highest VAS score of the two groups was seen at T1, and the lowest score at T3, and the VAS score at T2 was lower than that at T1 (all *P*<0.01). **Figure 2**.

Life quality assessment

The life quality score of the two groups at 3 months after discharge was analyzed, and it was found that the average life quality score of the research group was significantly higher than that of the control group ((83.00±6.07*)* points *vs. (*78.83±5.71) points, P<0.01). The scores of the research group were all better than those of the control group (all *P*<0.05). **Table 3**.

Comparison of nursing satisfaction

According to the survey on nursing satisfaction between the two groups at the time of discharge, the research group showed a overall nursing satisfaction of 88.24%, with 19 patients (55.88%) very satisfied with the nursing, 11 patients (32.35%) satisfied with it, 4 (11.76%) believing improvement needed, and 0 patients dissatisfied with the nursing. The control group showed an overall nursing satisfaction of 66.67%, with 8 patients (26.67%) very satisfied with the nursing, 12 (40.00%) satisfied with it, 7 patients (23.33%) believing improvement needed, and 3 patients (10.00%) dissatisfied with the nursing. The overall nursing satisfaction of the research group was significantly higher than that of the control group (*P*<0.05), and the majority of people in the research group were very satisfied with the nursing, while the majority of people in the control group were satisfied with it. **Table 4**.

Table 3. Life quality score of the two groups

	The research group (n = 34)	The control group (n = 30)	t	*P*
Body function	84.38±6.27	80.52±5.81	2.543	0.014
Cognitive function	86.29±6.81	83.01±6.17	2.009	0.049
Social activity function	82.63±5.83	78.31±5.49	3.040	0.004
No negative emotion	78.92±5.12	74.68±5.09	3.315	0.002
No recurrence	86.35±6.49	81.38±6.16	3.131	0.003
No pain	79.45±5.92	75.05±5.54	3.057	0.003
Average score	83.00±6.07	78.83±5.71	2.820	0.006

Table 4. Comparison of nursing satisfaction [n (%)]

	The research group (n = 34)	The control group (n = 30)	χ^2	*P-value*
Very satisfied	19 (55.88)	8 (26.67)		
Satisfied	11 (32.35)	12 (40.00)		
Improvement needed	4 (11.76)	7 (23.33)		
Dissatisfied	0 (0.00)	3 (10.00)		
Overall satisfaction	30 (88.24)	20 (66.67)	4.338	0.037

Discussion

Scoliosis, as a high-incidence of disease worldwide, and it not only poses a great threat to the physical and mental health of patients, but also increases the psychological and economic burden of families [14]. With the increasing incidence of scoliosis in recent years, growing clinical attention is paid to the psychological state and life quality of patients with scoliosis [15, 16]. Scoliosis is a common surgical disease that affects the growth and development of young people. Patients often have different degrees of negative emotions due to the shape changes and limited mobility brought by the disease. Currently, mild scoliosis can be treated through conservative treatment, and severe scoliosis is mainly treated through surgical treatment in clinical practice. Because surgery is invasive and patients are generally relatively young, the patients are prone to fear of surgery and to be highly sensitive to pain, which is easily induces poor treatment compliance and affects their prognosis [17]. Therefore, the nursing staff is required to not only provide routine nursing for patients, but also provide timely psychological comfort for them. At present, research on the pathology and life of patients with scoliosis is gradually increasing. For example, Lee H et al. [18] have studied the health-related life quality of scoliosis adolescents, and Talić G et al. [19] have concluded that understanding the complex correlation between personality/psychopathology and spinal deformity helps clinicians to formulate more effective treatment plans and predict treatment effects. However, there are few studies on nursing intervention for patients with scoliosis at present. Therefore, this study explored the effects of Rosenthal effect-based nursing on psychological state and life quality of patients with scoliosis using advanced statistical software and by following strict inclusion and exclusion criteria and rigorous scientific research efforts, which is more representative and comprehensive.

In this study, before operation, the research group showed lower stress indices than the control group. Before nursing, there was no significant difference between the two groups in HAMD and HAMA scores, but after nursing intervention, both groups had lower HAMD and HAMA scores, and the HAMD and HAMA scores of the research group were significantly lower than those of the control group. The results imply that Rosenthal effect-based nursing can effectively improve the psychological state of patients and reduce their preoperative negative emotions such as anxiety and fear. These results are consistent with the results in the study by Larking A M et al. [20] on the potential psychological effects of Rosenthal effect-based nursing on patients with chronic ulcer of skin. In this study, comparison of pain between the two groups showed that at T1, there was no significant difference between the two groups in pain score, while at T2 and T3, the pain score of the research group was significantly lower than that of the control group, suggesting that Rosenthal effect-based nursing is more conducive to the comfort of patients and reduction of psychological and physiological problems caused by pain than conventional nursing methods. Further comparison between the two groups in life quality at 3 months after discharge showed that the life quality of the research group was significantly higher than that of the control group, indicating that Rosenthal effect-based nursing is more conducive to the prognosis of patients.

We speculated that the difference between the two groups was due to the fact that patients not only suffer from physical pain caused by the disease, but also suffer from psychological pressure from the outside due to image changes in the course of the disease. One study by Sanders A et al. [21] has pointed out that 32% of adolescent patients have significant psychological and emotional distress. Therefore, if the patients are not given timely and effective psychological counseling, their negative emotions will continue to grow. In the Rosenthal effect-based nursing, the nursing staff is required to actively communicate with the patients, intervene and counsel their psychological state, as to relieve their psychological pressure, and help them be in a state of positive expectation and confidence for the operation, which can effectively avoid negative emotions in the patients. In the meantime, the nursing staff are also required to actively and effectively communicate with patients and their families, which soothes the anxiety of patients and their families, enables patients to establish a positive and optimistic state of mind and receive treatment at ease; all of which narrows the relationship between doctors and patients, and improves the trust of patients in the medical personnel. In this study, the nursing satisfaction of the research group was significantly higher than that of the control group, which can verify the implementation value of Rosenthal effect-based nursing in patients with scoliosis. Rosenthal effect-based nursing can effectively improve the overall impression of medical staff to patients and reconcile doctor-patient conflicts, so it can be used as an effective nursing mode in clinical surgery in the future. In addition, all-round psychological intervention for patients through Rosenthal effect-based nursing improves the psychological state of patients, enables patients to establish a positive and optimistic attitude towards diseases, accelerates their postoperative rehabilitation, and thus improves their prognosis and quality of life.

At present, nursing on scoliosis has become a major research hotspot in clinical practice, but there are few studies on the specific role of Rosenthal effect-based nursing in patients with scoliosis. In this study, there are many deficiencies due to the limitation of experimental conditions. For example, there are many nursing methods in clinical practice, but this study has focused on exploring the application of Rosenthal effect-based nursing, and did not investigate whether other nursing methods have the same clinical effect. In addition, the sample base of the study participants is small, which cannot rule out the possibility that Rosenthal effect-based nursing has different performance among patients of different ages. In the future, we will conduct more comprehensive research on these points, so as to obtain the best research results.

To sum up, Rosenthal effect-based nursing can effectively alleviate the negative emotion of patients with scoliosis and improve their life quality, so it is worthy of clinical application.

Disclosure of conflict of interest

None.

Address correspondence to: Weijun Fu, Department of Spine Surgery, The First People's Hospital of Wenling, 333 Chuanan South Road, Chengxi Street Area, Wenling 317500, Zhejiang, China. E-mail: wei14410403@163.com

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