

Original Article

The effect of community nursing based on the Roy adaptation model on postpartum depression and sleep quality of parturients

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Abstract: Objective: The study aimed to explore the effect of community nursing based on the Roy adaptation model on postpartum depression and sleep quality of parturients. Methods: According to different nursing methods, 96 parturients with postpartum depression were selected and divided into 47 cases in the regular group (undergoing regular nursing) and 49 cases in the combined group (undergoing community nursing based on the Roy adaptation model). The improvement in depression and sleep quality was compared between the two groups. Results: Comparison of the Hamilton Depression Scale (HAMD), Self-Rating Depression Scale (SDS) and Edinburgh Postpartum Depression Scale (EPDS) scores between the two groups showed that the above mentioned scores at intervention for 3 months < those of intervention for 2 months < those of intervention for 1 month < those of before intervention; showing significant differences ($P < 0.05$). The scores of HAMA, SDS and EPDS in the combined group after intervention for 1, 2 and 3 months were significantly lower than those in the regular group ($P < 0.05$). After intervention, the total score and the scores of all dimensions of Pittsburgh Sleep Quality Index (PSQI) were decreased in the two groups ($P < 0.05$), and the combined group had scores that were significantly lower than the regular group ($P < 0.05$). Conclusion: The use of community nursing intervention based on the Roy adaptation model for postpartum depressed parturients can effectively alleviate depression and improve sleep quality.

Keywords: Roy adaptation model, community nursing, postpartum depression, sleep quality

Introduction

The incidence of depression is about 10%, and the incidence in women is about twice that of men [1, 2]. The perinatal period is the peak of depression in women. This is mainly due to the great changes in the physiology and psychology of women and their unstable emotion after pregnancy and childbirth, as a result postpartum depression can easily occur. Patients with postpartum depression have no history of mental illness, but will develop emotional disorders after childbirth, mainly manifested as short-term and mild emotional changes, such as restlessness, crying, depression and other emotions, and they are irritable, depressed, easily anxious, and fearful, and worry too much about themselves and their infants. They often lose the ability to care for their infants and as well

as self-care, and may fall into a state of lethargy and confusion, with adverse effects on the parturients, family members and newborns [3, 4].

The symptoms of postpartum depression generally appear within 2 weeks after delivery, with a high incidence period of about 6 weeks after delivery [5]. A study has found that the incidence of postpartum depression is about 15%-30% [6]. Patients with postpartum depression are prone to anxiety and insomnia. In severe cases, they may even have hallucinations, suicide and infanticide. Postpartum depression is extremely harmful and is a public health concern, so it is very important to carry out postpartum preventive intervention. The hospitalization time of parturients after childbirth is strictly controlled by the hospital, and the pre-

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vention and nursing intervention measures for patients with postpartum depression are restricted. Therefore, community nursing intervention is particularly important to improve the sleep and depression of patients with postpartum depression. Community nursing is a community collective intervention mode that combines the characteristics of community health services, as it runs through the whole process of pre-pregnancy, pre-natal, during and post-natal care of parturients, and pays attention to the physiological, psychological and social aspects of patients [7].

Based on the overall situation, the Roy adaptation model is based on the principle that nursing care needs to promote adaptive responses, reduce ineffective responses, emphasize the leading role of nursing staff, conduct graded assessments of postpartum depression, understand in detail the causes of ineffective responses, and make targeted nursing according to the actual conditions to fundamentally relieve the depression of patients [8]. However, there is no community nursing intervention based on the Roy adaptation model for patients with postpartum depression. Based on this, our hospital and community health service stations jointly carried out community nursing intervention for patients with postpartum depression based on the Roy adaptation model to explore its effect on alleviating depression and improving sleep quality in patients with postpartum depression.

Materials and methods

General materials

According to the different nursing methods, 96 patients with postpartum depression were selected and divided into 47 cases in the regular group and 49 cases in the combined group. Inclusion criteria: ① the patients were clinically diagnosed with postpartum depression; ② the patients had a clear consciousness, and could communicate and complete the evaluation scale. Exclusion criteria: ① patients with mental illness and psychiatric disorders; ② patients with brain disease; ③ patients with hyperglycemia, high blood pressure or infectious diseases; ④ patients with congenital disease or liver and kidney dysfunction. This study was reviewed and approved by the Ethics Committee of Ordos Institute of Technology (Approval No. ChiCTR1800019964). All pati-

ents or their families signed the informed consent before participating in the research.

Methods

The regular group underwent regular nursing, which included using caring and warm terms to publicize and educate patients, and patiently answering patients' questions, so that they could understand the basics of postpartum depression; instructing patients to perform anal retraction training after childbirth to relieve vaginal relaxation, and instructing them in abdominal breathing to promote body recovery; asking the patients to use lukewarm water for bathing, and perform aerobic exercise in a gradual way; asking the patients to keep warm and keep the room quiet, tidy, and clean, with soft and sufficient light, and good ventilation; asking the patients to drink plenty of water and soup to ensure enough breast milk; asking the patients to have fresh fruits and varied meals.

The combined group received community nursing based on the Roy adaptation model. ① (a). Primary evaluation. A total of 4 output behaviors of the patients' self-concept, physiological function, role function, and interdependence were used to evaluate whether the patients had a behavioral invalid response. The community intervention staff was sincere when they first contacted the patient. They were careful and patient in asking about the situation, and showed an understanding and sympathetic attitude to establish an interdependent relationship with the patients. Community intervention staff evaluated the general behavioral indicators based on the patients' narration, and were familiar with the patients' medical history and related stimulating factors to provide a scientific and comprehensive nursing diagnosis for clinical nursing. (b). Secondary evaluation. The influence of self-concept, physiological function, role function, and interdependence on patients' behavior were evaluated, so that community intervention staff could fully understand the causes of patients' ineffective reactions, thereby laying the foundation for the implementation of the next step of nursing intervention, collating and analyzing the patients' data collected during nursing, and providing help to alleviate patients' depression and improve sleep quality. ② Intervention stage: When the depression and sleep quality of patients were gradually improved,

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their compliance with nursing was enhanced, and their willingness to participate in collective activities and communicate with others was also enhanced, and the specific nursing intervention measures could be given to the patients. (a). Psychological counseling. The communication was strengthened between community nurses and patients, and experienced parturients were invited to communicate with patients to relieve their anxiety, anxiety, depression, and enhance their confidence in life. The family members were instructed to understand the parturients to the utmost extent during the breastfeeding period without stimulating them, and give the patients understanding and support, so that the patients had a sense of security and belonging, and kept a good mood. (b). Health education. Patients were encouraged to get out of bed early after childbirth, and ask family members to assist in going to the toilet, which could promote the healing of the incisions in cesarean section parturients, and also promote breast secretion. Nurses guided the perineal care to the natural delivery parturients, and instructed them to clean the perineum immediately after defecation to prevent incision infection; nurses distributed health handbooks and gave one-to-one oral education to teach about neonatal care knowledge such as hip care, vaccination, feeding, hearing and disease screening, and umbilical care. Blackboard posters, bulletin boards, and videos for health promotion and education could be set up in the community, and psychologists could be hired to provide psychological counseling to patients when necessary. (c). Postpartum massage. After urination, the patients were asked to take a prone or supine position for uterine massage. Special massage oil was applied for parturients locally, Qihai, Xiawan, Zhongwan, Tianshu, Guanyuan, Taiheng, Zhongji and other acupoints were chosen, hands were put on the bottom of the uterus to perform a clockwise circular massage for 6-8 min, the massage method was explained during the massage to try to let the patients and family members master it so that they could perform it independently, and the parturients were guided to tie the abdominal belt in time after the massage. ③ Evaluation stage: The overall evaluation of the intervention effect was carried out for 12 weeks of the intervention, including subjective evaluation

and objective evaluation. Subjective evaluation was evaluated by the patients' narration and the observation of the intervention staff during the nursing process. The objective evaluation was the comparison of data before and after the questionnaire survey. The patients' depression and sleep quality improvement were discussed through these two evaluations.

Observation indicators

① The Hamilton Depression Scale (HAMD) [9, 10], Self-Rating Depression Scale (SDS) [11, 12], Edinburgh Postpartum Depression Scale (EPDS) [13, 14] were used to evaluate the degree of depression. HAMD had a total of 24 items, some of which had a 5-level scoring system (0-4 points), and some of them had a 3-level scoring system (0-2 points); SDS had a total of 20 items, with 10 items for forward score and 10 for reverse score. A 4-level scoring system (1 to 4 points) was used for forward scoring and a 4-level scoring system (4 to 1 points) was used for reverse scoring; EPDS had a total of 10 items with a 4-level scoring (0 to 3 points). Higher EPDS, HAMD, and SDS scores represented more severe depression of patients. ② The Pittsburgh Sleep Quality Index (PSQI) [15, 16] was used to evaluate sleep quality, which included 7 dimensions including sleep latency, subjective sleep quality, sleep persistence, habitual sleep duration, sleep disturbance, daytime dysfunction, and sleep medication use. A 4-level score (0 to 3 points) was used. A higher score represents worse quality of sleep.

Statistical methods

The statistical analysis of data was processed by SPSS 22.0. Count data were expressed by (n, %) and χ^2 test was adopted. The measurement data were expressed by $\bar{x} \pm s$. The independent *t* and paired sample *t* was tested for inter-group comparisons and intra-group comparisons. For comparison at different time points, the variance analysis of repeated measurement data was used to analyze the inter-group differences and the time differences of the measured values at each time point, and LSD-*t* test was performed for post hoc test. GraphPad Prism 8.1 was used to make the fig-

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Table 1. Comparison of baseline data between the two groups ($\bar{x} \pm s$; n , %)

Groups		Combined group (n=49)	Regular group (n=47)	t/ χ^2	P
Age (years)		28.91±5.42	28.61±5.25	0.275	0.784
Course of disease (months)		3.52±1.03	3.42±0.94	0.496	0.621
Educational background	Junior high school and below	18 (36.73)	15 (31.91)	0.153	0.696
	High school	15 (30.61)	17 (36.17)		
	College degree and above	16 (32.65)	15 (31.91)		
Delivery mode	Natural delivery	27 (55.1)	24 (51.06)	0.157	0.692
	Cesarean	22 (44.9)	23 (48.94)		
Parity	Primipara	38 (77.55)	35 (74.47)	0.125	0.724
	Multipara	11 (22.45)	12 (25.53)		

Table 2. Comparison of HAMA scores between the two groups at different time points ($\bar{x} \pm s$)

Groups	Case number	Before intervention	Intervention for 1 month	Intervention for 2 months	Intervention for 3 months	F _{time point}	F _{inter-group}	F _{interaction}
Combined Group	49	25.08±6.63	18.51±4.68 ^a	12.94±2.70 ^{a,b}	8.73±1.73 ^{a,b,c}	352.882	25.387	17.191
Regular group	47	24.36±5.52	22.38±4.84 ^a	18.98±3.60 ^{a,b}	12.98±2.63 ^{a,b,c}			
t		0.577	3.985	9.335	9.389			
P		0.565	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Note: Compared with before the intervention, ^a $P<0.05$; compared with the intervention for 1 month, ^b $P<0.05$; compared with the intervention for 2 months, ^c $P<0.05$.

ures. $P<0.05$ was considered as statistically significant.

Results

Baseline data

There were 47 cases in the regular group, aged (28.61±5.25) years, with a course of disease of (3.42±0.94) months, while there were 49 cases in the combined group, aged (28.91±5.42) years, with a course of disease of (3.52±1.03) months. There was no significant difference between the two groups in baseline data such as age, course of disease, education, mode of delivery, and parity ($P>0.05$) (Table 1).

Depression

Repeated measurements showed that the HAMA, SDS, and EPDS scores were significantly different in terms of time-point and inter-group interactions ($P<0.05$). The scores of HAMA, SDS and EPDS between the two groups showed those with intervention for 3 months < those of intervention for 2 months < those of intervention for 1 month < those before intervention; which all revealed significant differences ($P<0.05$). The scores of HAMA, SDS and

EPDS in the combined group at intervention for 1, 2 and 3 months were significantly lower than those of the regular group ($P<0.05$), suggesting that HAMA, SDS and EPDS scores of the two groups were decreased with the extension of intervention time, and the reduction degree in the combined group was more significant than that in the regular group (Tables 2-4; Figure 1).

Sleep quality

Before intervention, there was no significant difference in the total scores of PSQI and scores of each dimension (sleep latency, subjective sleep quality, sleep persistence, habitual sleep duration, sleep disturbance, daytime dysfunction, and sleep medication use) of PSQI between the two groups ($P>0.05$). After intervention, the total scores of PSQI and scores of each dimension of PSQI in the two groups were lower than those before intervention ($P<0.05$), and the combined group had scores that were significantly lower than the regular group ($P<0.05$), indicating that the reduction degree of PSQI score in the combined group was more significant than that in the regular group after intervention (Table 5).

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Table 3. Comparison of SDS scores between the two groups at different time points ($\bar{x} \pm s$)

Groups	Case number	Before intervention	Intervention for 1 month	Intervention for 2 months	Intervention for 3 months	F _{time point}	F _{inter-group}	F _{interaction}
Combined group	49	63.55±6.58	54.37±6.18 ^a	50.71±5.76 ^{a,b}	47.39±6.38 ^{a,b,c}	229.988	10.672	6.702
Regular group	47	63.91±6.42	58.81±5.59 ^a	55.72±6.82 ^{a,b}	51.23±5.39 ^{a,b,c}			
t		0.274	3.689	3.892	3.184			
P		0.784	<0.001	<0.001	<0.001	<0.001	0.002	<0.001

Note: Compared with before the intervention, ^aP<0.05; compared with the intervention for 1 month, ^bP<0.05; compared with the intervention for 2 months, ^cP<0.05.

Table 4. Comparison of EPDS scores between the two groups at different time points ($\bar{x} \pm s$)

Groups	Case number	Before intervention	Intervention for 1 month	Intervention for 2 months	Intervention for 3 months	F _{time point}	F _{inter-group}	F _{interaction}
Combined group	49	13.45±2.48	11.27±2.89 ^a	9.73±1.88 ^{a,b}	6.49±1.61 ^{a,b,c}	209.377	18.851	6.203
Regular group	47	14.49±3.63	12.87±2.14 ^a	10.85±1.78 ^{a,b}	9.45±2.35 ^{a,b,c}			
t		1.708	3.090	2.984	7.230			
P		0.091	0.003	0.004	<0.001	<0.001	<0.001	<0.001

Note: Compared with before the intervention, ^aP<0.05; compared with the intervention for 1 month, ^bP<0.05; compared with the intervention for 2 months, ^cP<0.05.

Discussion

Community nursing intervention based on the Roy adaptation model refers to the application of the Roy adaptation model for nursing intervention based on community nursing. Community nursing conducts comprehensive nursing intervention for patients from psychology, community, family, etc. In terms of psychological and family nursing, community nursing communicates with patients to ease their negative emotions, and instructs their families to understand and tolerate patients to the greatest extent, so that patients have a sense of security and belonging and maintain a good mood; in terms of community care, health education is carried out through community blackboard posters, bulletin boards, and videos, as well as postpartum massage to help patients recover after childbirth [17-19]. The Roy adaptation model is founded on the idea that human beings are holistic, open and adaptive. When exchanging materials, energy and information with the environment, humans will adjust their integrity to adapt to the environment. The main work of nursing is to promote adaptive responses and reduce ineffective reactions [20, 21].

Community nursing intervention based on the Roy adaptation model conducts primary and secondary evaluations for patients with post-

partum depression. Through detailed understanding of the factors that stimulate postpartum depression and the exact causes of primary ineffective reactions, precautions in the nursing process can be determined. After the analysis of the patients' condition, the nursing staff can give targeted nursing to relieve the patients' depression [22, 23]. Community nursing intervention based on the Roy adaptation model shows two mechanisms of physiological and psychological adjustment through four adaptation modes: self-concept, physiological function, role function, and interdependence. Among them, self-concept is adaptive behavior, physiological function is the human physiological needs, role function is the performance of the responsibilities that people should perform in different roles, interdependence is the correlation between individuals and other people, and role function and interdependence respectively reflected the integrity of human and individual social relations [24, 25]. In this study, the comparison results of HAMD, SDS and EPDS scores between the two groups showed that those with intervention for 3 months < those of intervention for 2 months < those of intervention for 1 month < those before intervention; and the scores of HAMA, SDS and EPDS in the combined group of intervention for 1, 2 and 3 months were significantly lower than those of the regular group. The results showed that community nursing inter-

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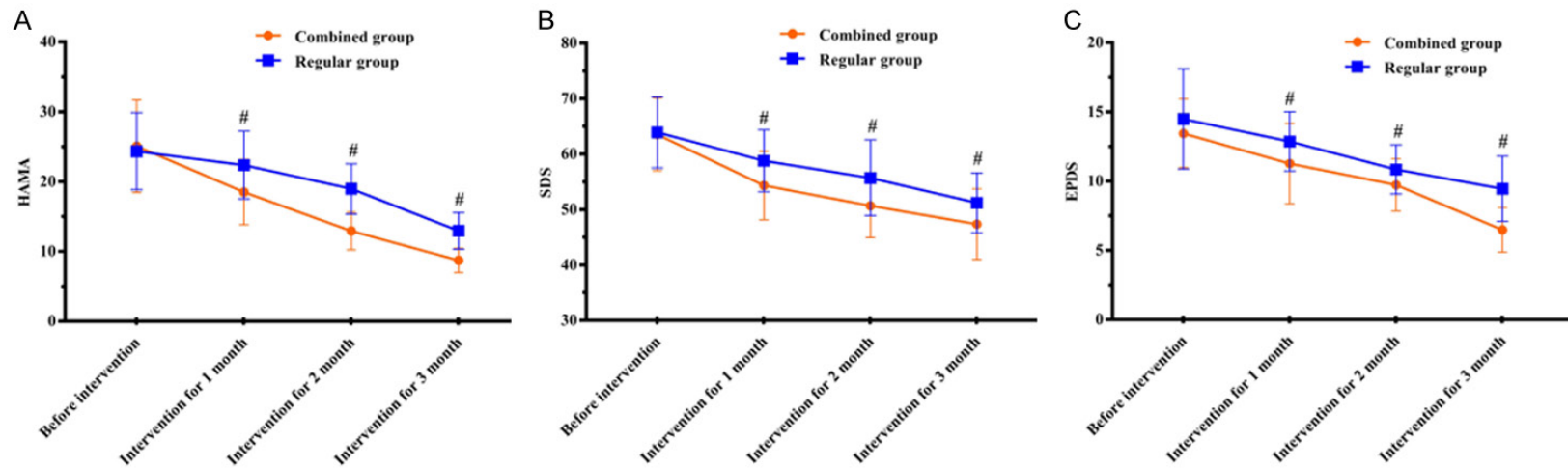


Figure 1. Comparison of HAMA, SDS and EPDS scores between the two groups at different time points. The HAMA (A), SDS (B) and EPDS (C) scores of the two groups before intervention were not significantly different ($P>0.05$); the HAMA, SDS and EPDS scores of the combined group of intervention for 1, 2, and 3 months were significantly lower than those of the regular group ($P<0.05$). # means $P<0.05$ compared with the regular group.

Table 5. Comparison of sleep quality between the two groups before and after intervention ($\bar{x} \pm s$)

Groups	Time point	Subjective sleep quality	Sleep latency	Sleep persistence	Habitual sleep duration	Sleep disturbance	Sleep medication use	Daytime dysfunction	Total score of PSQI
Combined group (n=49)	Before intervention	2.03±0.62	2.29±0.74	2.25±0.65	2.49±0.76	2.54±0.76	2.49±0.73	2.15±0.62	15.11±2.11
	After intervention	1.38±0.39	1.36±0.39	1.36±0.35	1.21±0.32	1.21±0.31	1.17±0.41	1.51±0.27	8.93±1.96
t_a		6.212	7.783	8.439	10.866	11.343	11.036	6.625	15.021
P_a		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Regular group (n=47)	Before intervention	2.15±0.73	2.16±0.57	2.09±0.65	2.2±0.61	2.41±0.54	2.35±0.67	2.25±0.69	14.75±2.19
	After intervention	1.67±0.43	1.74±0.53	1.65±0.65	1.93±0.45	1.83±0.42	1.87±0.6	1.81±0.53	12.07±1.78
t_a		3.884	3.699	3.282	2.442	5.812	3.659	3.467	6.51
P_a		<0.001	<0.001	0.001	0.017	<0.001	<0.001	0.001	<0.001
t_b		0.869	0.961	1.206	2.057	0.962	0.978	0.748	0.82
P_b		0.387	0.339	0.231	0.043	0.338	0.331	0.457	0.414
t_c		3.464	4.013	2.737	9.064	8.253	6.698	3.516	8.206
P_c		0.001	<0.001	0.007	<0.001	<0.001	<0.001	0.001	<0.001

Note: t_a and P_a indicated intra-group comparison; t_b and P_b indicated comparison before intervention; t_c and P_c indicated comparison after intervention.

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vention based on the Roy adaptation model can alleviate the depression of postpartum patients. This study also evaluated the sleep quality of patients, and the results showed that the total score and scores of all dimensions of PSQI were reduced in the two groups after intervention, and the combined group was significantly lower than the regular group. The study results further showed that community nursing intervention based on the Roy adaptation model could alleviate patients' depression, ease their mind, and improve their sleep quality.

To sum up, the study adopted community nursing intervention based on the Roy adaptation model for postpartum depression parturients through three stages of evaluation, intervention, and assessment. In the evaluation stage, the primary and secondary evaluations were used to evaluate whether the patients had invalid behavioral responses and the exact cause of these, which provided a basis for the implementation of nursing intervention. In the intervention stage, psychological counseling, health education, and postpartum massage enabled patients to understand their postpartum situation, so that they could relax physically and mentally during the process of psychological counseling and promote postpartum recovery to improve their physical and psychological development. The assessment stage was the overall evaluation of the patients' depression and sleep quality improvement over 12 weeks. The final result showed that community nursing intervention based on the Roy adaptation model could effectively alleviate the depression of patients with postpartum depression and improve their sleep quality. However, the sample size of this study was relatively small, and the intervention time was only 12 weeks. Due to time constraints, it was impossible to evaluate the long-term effect of community nursing intervention based on the the Roy adaptation model in patients with postpartum depression. In the future, further study will be carried out on the impact of larger samples and longer intervention time for the long-term effects.

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Disclosure of conflict of interest

None.

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