

Original Article

The effect of empowerment education-based nursing intervention on the postoperative sexual function and depression state of cervical cancer patients of reproductive age

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Abstract: This study aimed to analyze the effect of empowerment education-based nursing interventions on the postoperative sexual function (FSFI) and depression state (SDS) of cervical cancer patients of reproductive age. A total of 69 cervical cancer patients of reproductive age admitted to our hospital were randomly divided into a control group (CG, n=34), which underwent conventional nursing interventions and an observation group (OG, n=35), which received empowerment education-based nursing interventions. The nursing outcomes were compared. Within 1-6 months after the operations, the sexual function and self-care ability scores in the OG were higher than they were in the CG. The SDS scores in the OG were lower than they were in the CG ($P<0.05$). The awareness of disease and nursing satisfaction in the OG were 85.71% and 91.43%, higher than the 64.71% and 73.53% in the CG ($P<0.05$). At 3 and 6 months after the operations, the quality of life scores in the OG were higher than they were in the CG ($P<0.05$). Nursing interventions based on empowerment education can alleviate depression and improve sexual function, self-care ability, quality of life, and awareness of disease, achieving better nursing satisfaction.

Keywords: Empowerment education, nursing intervention, reproductive age, cervical cancer, female sexual function, depressive state

Introduction

Although it has a slightly lower incidence than breast cancer, cervical cancer is considered one of the most severe malignant cancers in women, and, together with breast cancer, it is one of the top two female malignant cancers with the highest incidence and mortality rates [1, 2]. In China, benefiting from the progresses in medical detection and diagnosis and the vigorous promotion of cervical cancer screening policies in recent years, we have seen an increasing rate of active examinations and therefore higher rates of detection, allowing more patients with cervical cancer to receive early treatment and/or surgical resections [3, 4].

The more than 70% overall survival rate within 5 years after the early resection of cervical

cancer reported by Ojamaa et al. [5] told us that early diagnosis and treatment are quite important for cervical cancer patients. However, for female patients of reproductive age, the disease and any surgery would have a serious impact on their lives, including a variety of physiological, psychological, and social issues, leading to a significantly poor quality of life [6]. Besides, among some younger women, the surgery impairs postoperative sexual function and then the marriage bond, which is also a major cause of patients' psychological and life problems [7, 8]. Given this, the focus is on such nursing interventions that recover patients' quality of life quickly and to a larger extent [9].

Empowerment education serves as a self-care theory that focuses on the development of health education, passing on social, medical, and

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Table 1. The general data in both groups ($\bar{x} \pm s$)/[n (%)]

Item		OG (n=35)	CG (n=34)	t/X ²	P
Average age (years)		34.15 ± 10.18	36.57 ± 11.42	0.930	0.356
Age groups	<40	20 (57.14)	21 (61.76)	0.153	0.696
	≥40	15 (42.86)	13 (38.24)		
BMI (kg/m ²)		22.43 ± 1.67	22.78 ± 1.72	0.858	0.394
Education level	Junior high school or below	7 (20.00)	10 (29.41)	1.292	0.517
	Technical secondary school or high school	23 (65.71)	21 (61.76)		
	Junior college or above	5 (14.29)	3 (8.82)		

pedagogical knowledge, as it emphasizes that nursing interventions based on empowerment education for patients with cervical cancer help to improve their self-care ability and perfect the work of the nursing staff [10, 11]. In this study, 69 patients admitted to our hospital from September 2018 to August 2019 were recruited for this study in order to investigate the application of empowerment education-based nursing interventions.

Materials and methods

Objects

A total of 69 cervical cancer patients of reproductive age admitted to our hospital from September 2018-August 2019 were enrolled and randomly divided into two groups, i.e. the control group (CG, n=34) and the observation group (OG, n=35). All the patients were informed of the details of this study, and the submitted signed informed consents of their own free will. The research described in this paper was approved by the Ethics Committee of West China Second University Hospital, Sichuan University.

Inclusion and exclusion criteria

(1) Inclusion criteria: patients who met the diagnostic criteria for cervical cancer [3]; patients 20-48 years old; married patients whose husbands were free of any fertility-related abnormalities or diseases; patients who were able to undergo surgical treatment; and patients who able to finish the six-month post-operative follow-up study, were enrolled. (2) Exclusion criteria: patients who also suffered from any cognitive disorder that may impact the assessment in this study; patients who showed a specific manifestation of sexual dysfunction or psychosexual disorder before the enrollment; patients who did not show any indication of requiring

surgical resection but needed other treatments such as radiotherapy and chemotherapy; patients who also had severe cardiovascular and cerebrovascular diseases that impacted their sexual life; or patients unable to finish the expected follow-up were excluded.

Nursing methods

Patients in the CG were given conventional nursing interventions, specifically including health education, psychological counseling, diet intervention, guidance on postoperative recovery, and sexual life, etc.

Patients in the CG were given empowerment education-based nursing interventions specifically as follows: Organize the empowerment education-based nursing team: composed of 1 doctor in charge responsible for the diagnosis and management of disease, 1 psychological counselor for psychological assessment and counseling, 1 charge nurse for the implementation of nursing interventions and the evaluation of nursing efficacy, as well as 3 primary nurses cooperating with the implementation of the nursing interventions and any communications with the patients.

Clarify problems

The nursing staff explained the empowerment education to all patients so that they would have a clear understanding of and get more confidence in it. The patients were grouped by age (we set 40 as the limit) and were encouraged to communicate with each other about the existing problems such as what makes them most confused, what they want to learn during their stay, or the inner doubts they want to resolve most after surgery. Once the patients have determined their own problems, the caregivers worked with them to analyze the root cause of these problems.

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Table 2. Sexual function of the patients in both groups ($\bar{x} \pm s$, points)

Groups		Preoperation	1 month after operation	2 months after operation	3 months after operation	4 months after operation	5 months after operation	6 months after operation
OG (n=35)	Sexual satisfaction	4.32 ± 0.52	4.12 ± 0.78	3.58 ± 0.72	3.02 ± 0.69	2.84 ± 0.67	2.34 ± 0.56	2.02 ± 0.34
	Sexual arousal and orgasm	4.33 ± 0.50	4.10 ± 0.69	3.61 ± 0.75	3.11 ± 0.65	2.87 ± 0.61	2.38 ± 0.52	2.19 ± 0.39
	Vaginal lubrication and dyspareunia	4.40 ± 0.31	4.02 ± 0.67	3.58 ± 0.71	3.15 ± 0.62	2.84 ± 0.58	2.31 ± 0.50	2.07 ± 0.42
	Sexual desire	4.39 ± 0.26	4.15 ± 0.72	3.63 ± 0.59	3.12 ± 0.60	2.81 ± 0.57	2.26 ± 0.48	2.12 ± 0.37
CG (n=34)	Sexual satisfaction	4.36 ± 0.42	3.62 ± 0.57	3.15 ± 0.48	2.63 ± 0.43	2.52 ± 0.45	2.02 ± 0.32	1.73 ± 0.25
	Sexual arousal and orgasm	4.30 ± 0.37	3.68 ± 0.58	3.03 ± 0.64	2.64 ± 0.49	2.32 ± 0.59	1.98 ± 0.40	1.75 ± 0.28
	Vaginal lubrication and dyspareunia	4.43 ± 0.39	3.52 ± 0.62	3.02 ± 0.61	2.86 ± 0.53	2.23 ± 0.48	2.01 ± 0.43	1.67 ± 0.24
	Sexual desire	4.33 ± 0.33	3.68 ± 0.64	3.21 ± 0.52	2.68 ± 0.49	2.37 ± 0.51	1.92 ± 0.42	1.69 ± 0.29

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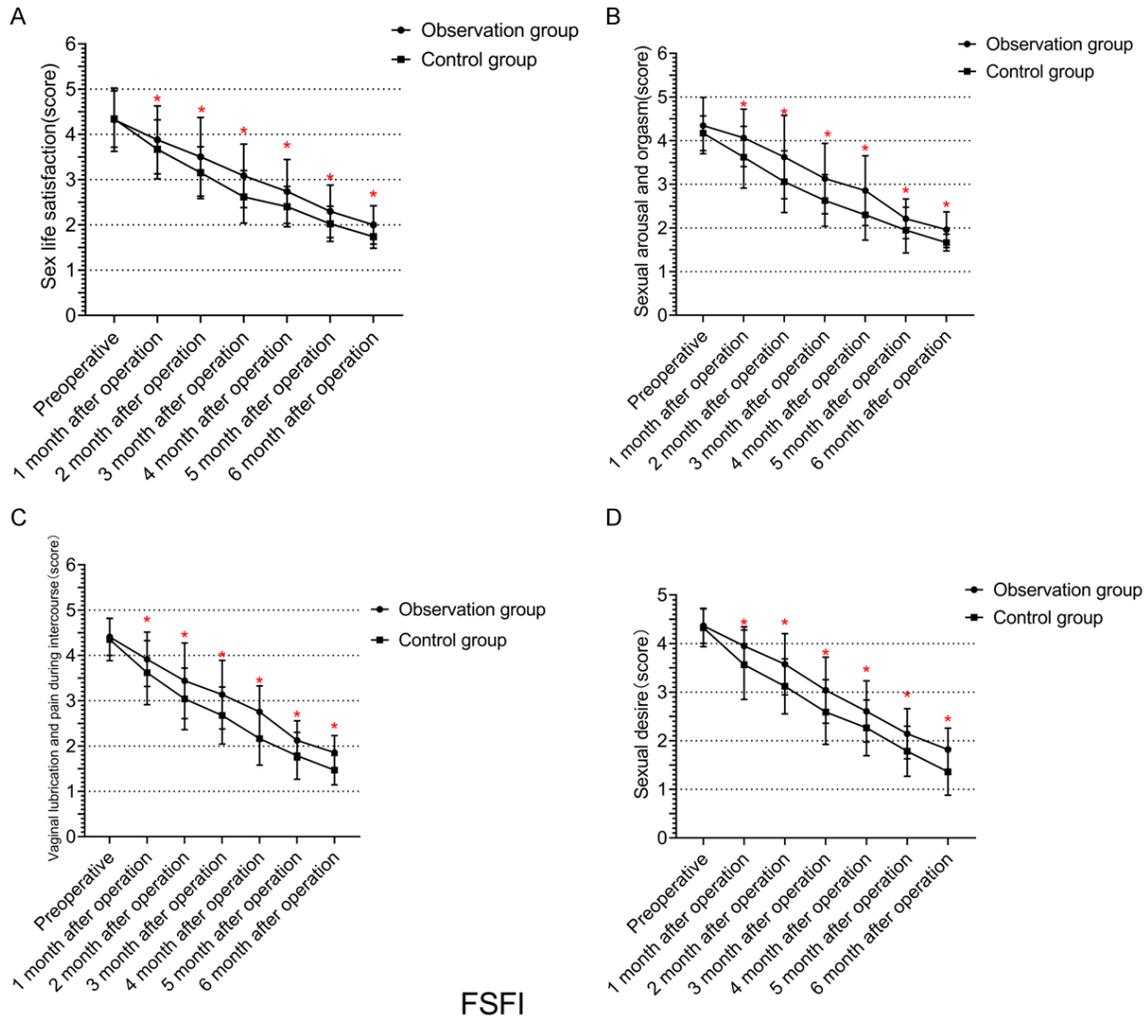


Figure 1. Sexual function of the patients in both groups. Before the operations, there were no significant differences between the two groups in their sexual life satisfaction, sexual arousal and orgasm, vaginal lubrication, dyspareunia, and sexual desire scores ($P>0.05$). At 1, 2, 3, 4, 5, and 6 months after the operations, these individual scores decreased, and under each item the score in the OG was higher than it was in the CG ($P<0.05$). * indicates $P<0.05$.

Expression

The nursing staff was required to listen carefully and patiently when the patients talked out their hearts, including how they felt when they knew the fact that they were attacked by the disease, and what their family and friends said about it. The nursing staff was required to encourage the patients to get negative emotions off their chests and never talk about them. Instead, they should focus on giving the patients sufficient support and care, analyzing and improving the circumstances as much as possible in order to raise the comfort level. In case that the patients have any questions or doubts, they answered and showed encouragement in such a way that patients would have more confidence in coping with the disease.

Set goals

Nursing staff should guide the patients to set goals by themselves. The nursing staff serve only to guide and do not express any opinions. The patients were allowed a sufficient period of time to consider the situation on their own and determine their goals as their abilities allow. Questions given by nursing staff shall be guiding. For example, to what extent do you think you can recover? Do you have any ideas about the existing problems to be resolved?

Planning

The patients participated in the treatment planning with the caregivers' guidance, dealing with questions such as what do you think we

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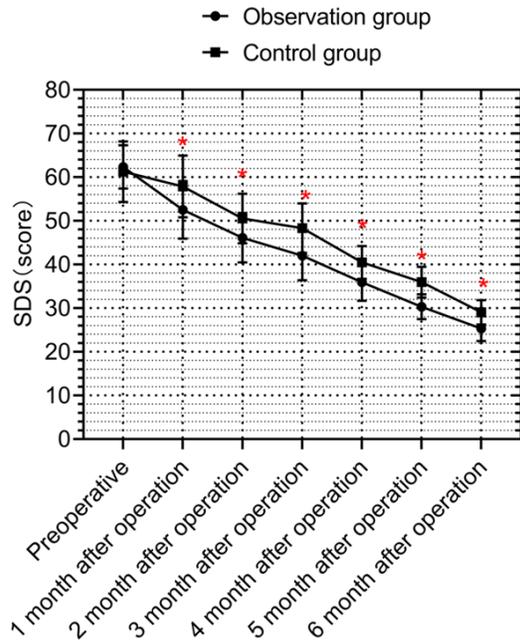


Figure 2. Severity of the patients' depression in both groups. Before the operations, there were no significant differences between the two groups in their SDS scores ($P > 0.05$). At 1, 2, 3, 4, 5, and 6 months after the operations, the scores in the OG were lower than those in the CG ($P < 0.05$). * indicates $P < 0.05$.

should do now? Furthermore, they got involved in group discussion where the caregiver introduced those successful cases to other patients in a group and encouraged them to finish the planning. Here the nursing staff mainly acts as a consultant who offers professional guidance and helps in the planning and as appropriate personally demonstrates some specific operations, e.g. colpectasia and anal contraction exercises, to ensure the patients act on their own.

Outcome evaluation

The patients were evaluated by the nursing staff on the feasibility of the plans they made and then completed the self-evaluation under their guidance. Before the next educational activity, the patients were asked to answer the following questions: Have the goals been achieved? Is the vaginal dryness improved, in your opinion? If the patient was satisfied with the education, they were invited to talk about it specifically, and if not, they were encouraged and supported to find the causes so as to improve it in the next stage.

A health education session on cervical cancer, rehabilitation, and sexual life mainly was carried out before the operations, and at 1-6 months after the operations, separately, for at least half an hour in each of the two groups.

Outcome measures

(1) Sexual function: This was determined using the Female Sexual Function Index (FSFI) [12] for sexual evaluation. The scale was composed of modules for sexual desire, sexual arousal, and orgasm, sexual life satisfaction, vaginal lubrication, and dyspareunia. In each module, a score of 0, 1, and 5 indicates: no sexual life, feel the worst, and feel the best, respectively. The evaluations were performed before and at 1-6 months after the operations.

(2) Severity of depression: A self-rating depression scale (SDS) [13] was used for the evaluations. The SDS scale has 20 questions. Each item is scored on a scale ranging from 1 to 4. The total score is derived by adding the individual item scores and ranges from 20 to 80. 50 is the cut-off point. A score below 50 indicates not depressed, but a score above 50 indicates more severe depression. The assessment was performed before and at 1-6 months after the operations.

(3) Awareness of disease: This was determined using a home-made questionnaire which covers what patients do or do not know about cervical cancer, do or do not know about the method of cervical cancer screening, do or do not know about human papilloma virus (HPV), do or do not know about the relationship between HPV and the occurrence of cervical cancer, do or do not have knowledge of cervical cancer treatment, and do or do not have knowledge of cervical cancer rehabilitation. Patients who master more than 90% of the knowledge above were considered to have high awareness. Those realizing 60%-90% of the knowledge were secondary, and those knowing less than 60% were deemed as having a low awareness. Awareness of disease = (number of patients with high awareness + number of patients in secondary awareness)/total cases * 100%.

(4) Self-care ability: This was evaluated using the Self-care ability determination scale (ES-CA) [14] which has a total of 43 questions covering health knowledge, self-care responsibili-

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Table 3. Awareness levels of the patients in both groups [n (%)]

Groups	High	Moderate	Low	Awareness
OG (n=35)	13 (37.14)	17 (48.57)	5 (14.29)	30 (85.71)
CG (n=34)	10 (29.41)	12 (35.29)	12 (35.29)	22 (64.71)
χ^2				4.100
P				0.043

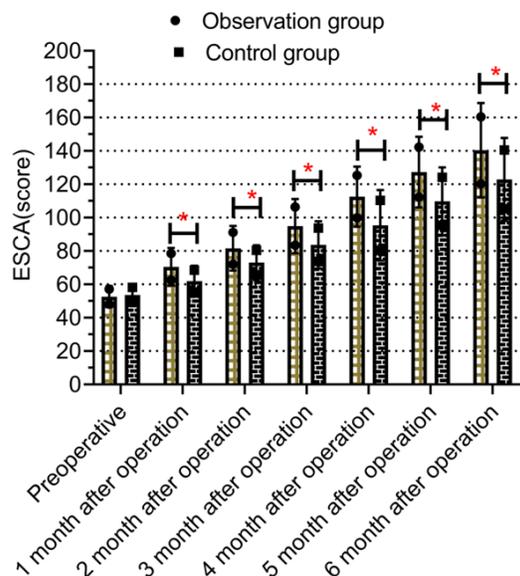


Figure 3. The self-care abilities of the patients in both groups. Before the operations, there were no significant differences between the two groups in terms of their ESCA scores ($P > 0.05$). At 1, 2, 3, 4, 5, and 6 months after the operations, the scores in the OG were higher than they were in the CG ($P < 0.05$). * indicates $P < 0.05$.

ty, self-concept, and self-care skills. Each item was scored on a scale ranging from 1 to 4. The total possible score is 172. A higher score indicates that the patient is better at self-care. The assessments were performed before and at 1-6 months after operations.

(5) Quality of life: This was evaluated using the European Agency for Cancer Research and Therapy Core quality of life scale-C30 (EORTCQ-LQ-C30) [15] which proposes 30 items covering 5 functional modules, 3 symptom modules, 1 in overall health and 6 single items. Except for items 29 and 30, which are scored on a scale ranging from 1 to 7, items 1-28 are scored on a scale ranging from 1 to 4. The total possible score is 30-126, where a higher score indicates a higher quality of life. The assessment was performed before and at 3 and 6 months after the operations.

(6) Satisfaction with nursing: This was determined using the home-made questionnaire which asked questions on the admission, hospital environment, living aids, problem solving, attitude of nursing, technical operation, ward inspection, medication guidance, and health education. Under each item, 0, 2, and 4 represent dissatisfied, generally satisfied, and satisfied, respectively. The total possible scores ranged from 0-36 where 20 and below indicates dissatisfied, 21-30 indicates generally satisfied, and 31-36 indicates quite satisfied. The surveys were performed at discharge.

Statistics

The statistical analysis was performed using SPSS 22.0. The measurement data was expressed as ($\bar{x} \pm s$); the comparisons between groups were subjected to independent sample t tests. The enumeration data was expressed as [n (%)]; the comparisons between groups were subjected to χ^2 tests, but the intra-group ones were subjected to ANOVA and an F test. $P < 0.05$ indicated that the difference was statistically significant.

Results

Comparison between the two groups in terms of the general data

No significant differences between the two groups in terms of their average age, age distribution of < 40 years old and ≥ 40 years old, body mass index (BMI), or education level were recorded ($P > 0.05$) (Table 1).

Empowerment education improves sexual function

Before the operations, there was no significant difference between the two groups in terms of their sexual life satisfaction, sexual arousal and orgasm, vaginal lubrication, dyspareunia, and sexual desire scores ($P > 0.05$). At 1-6 months after operation, these individual scores decreased, and under each item the score in the OG was higher than it was in the CG ($P < 0.05$) (Table 2; Figure 1).

Empowerment education alleviates depression

The SDS scores in the OG before and at 1, 2, 3, 4, 5, and 6 months after the operations were (62.85 ± 6.65), (52.03 ± 5.85), (46.12 ± 4.37), (42.02 ± 4.02), (35.94 ± 3.67), (30.31 ± 2.59), and (25.31 ± 2.38), respectively. The

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Table 4. Quality of life in both groups ($\bar{x} \pm s$, points)

Groups	Cases	Preoperation	3 months after	6 months after
OG	35	53.62 ± 5.18	80.49 ± 10.24	100.15 ± 15.86
CG	34	50.39 ± 5.34	70.19 ± 8.75	85.67 ± 12.27
<i>t</i>		2.550	4.486	4.233
<i>P</i>		0.013	0.000	0.000

SDS scores in the CG before and at 1, 2, 3, 4, 5, and 6 months after the operations were (61.98 ± 6.18), (57.87 ± 5.27), (50.54 ± 4.68), (48.32 ± 4.28), (40.56 ± 3.13), (36.45 ± 3.02), and (29.05 ± 2.49). There were no significant differences in the SDS scores between the two groups before the operations ($P > 0.05$). At 1, 2, 3, 4, 5, and 6 months after the operations, the records in both groups decreased, and those in the OG were significantly lower than they were in the CG ($P < 0.05$) (Figure 2).

Empowerment education improves awareness of disease

The numbers of cases showing high, secondary, and low awareness of the disease were 13, 17, and 5 respectively in the OG. The numbers in the CG were 10, 12 and 12. Overall, the awareness in the OG was 85.71% and in the CG 64.71% ($P < 0.05$) (Table 3).

Empowerment education promotes self-care ability

The self-care ability scores before and at 1, 2, 3, 4, 5, and 6 months after the operations were (52.13 ± 5.85), (70.52 ± 8.37), (82.13 ± 10.16), (95.46 ± 12.43), (112.34 ± 15.93), (128.46 ± 21.03), and (135.76 ± 25.12) in the OG, and (53.62 ± 5.48), (61.43 ± 7.18), (73.64 ± 8.49), (83.71 ± 10.49), (101.42 ± 12.42), (110.23 ± 16.67), and (122.83 ± 22.16) in the CG. There was little difference in the self-care ability scores before the operations ($P > 0.05$). At 1, 2, 3, 4, 5, and 6 months after the operations, the scores increased in both groups, but those in the OG were superior to those in the CG ($P < 0.05$) (Figure 3).

Empowerment education improves quality of life

There was little difference in the quality of life scores between the two groups before the operations ($P > 0.05$). At 3, and 6 months after the operations, the scores increased in both groups, but those in the OG were superior to

those in the CG ($P < 0.05$) (Table 4).

Empowerment education increases satisfaction with nursing

The number of cases reporting quite satisfied with the nursing, generally satisfied, and dissatisfied were 15, 17, and 3 respectively for an overall rate of 91.43% in the OG and 11, 14, and 9 for an overall rate of 73.53% in the CG ($\chi^2 = 3.846$, $P = 0.049$) (Figure 4).

Discussion

Empowerment education initially emphasizes the rights and abilities of individuals and communities, but now in nursing intervention is becoming a novel method of health education that has received increasing attention [16]. Empowerment education in health education aims to help patients discover the inherent ability of self-care or to improve the ability of self-care they have shown [17]. It is patient-centered and with the help of medical staff leading patients to take an active part in the rehabilitation by determining the existing problems, planning developing educational plans and carrying plans out together with the health educators. Finally, it aims to help patients learn methods of self-care, promoting behavior change and therefore rehabilitation [18, 19]. In practice it can be summarized as organizing, expressing, setting goals, planning, and evaluation. Health education programs based on empowerment education ensure the implementation of programs in a scientific, technical, and effective fashion [20, 21].

Lee et al. [22] found that patients with cervical cancer in developed countries return, with the guidance of medical staff, to a normal sexual life within 1 month after their operations, but in China the number is reduced to only about 10%. In this study, the patients in both the OG and CG had reduced sexual function from 1 month to 6 months after their operations, indicating that cervical cancer surgery affects sexual function. However, after the empowerment education-based nursing invention the patients in the OG enjoyed a smaller reduction in their sexual life satisfaction, sexual arousal and orgasm, vaginal lubrication, dyspareunia, and sex-

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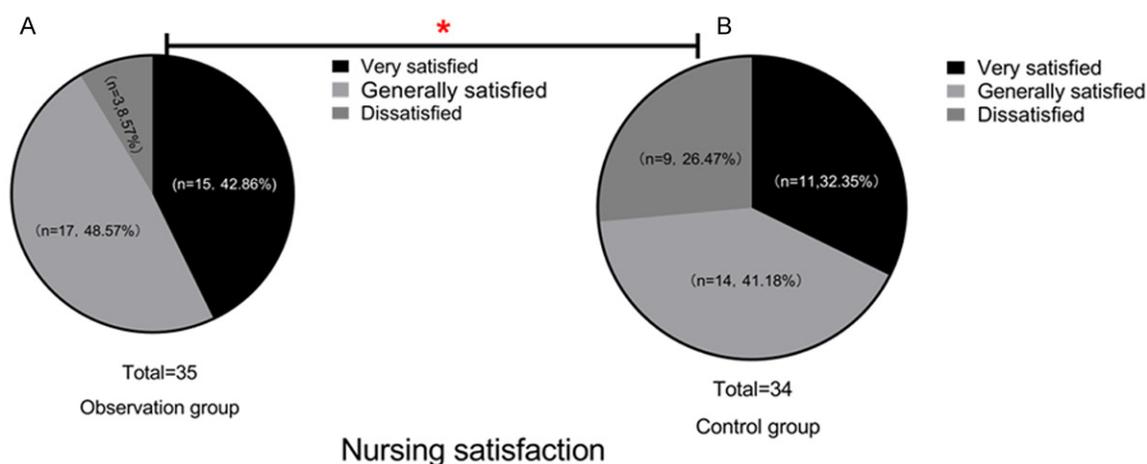


Figure 4. Satisfaction with nursing reported by the patients in both groups. In terms of the cases reporting quite satisfied or generally satisfied, there was little difference between the two groups ($P > 0.05$). But the number of dissatisfied patients in the OG was smaller than it was in the CG ($P < 0.05$). * indicates $P < 0.05$.

ual desire compared to those in the CG ($P < 0.05$), suggesting that nursing intervention based on empowerment education controls the sexual decline more effectively, which could be explained by the fact that in empowerment education the nursing staff deals with psychological problems and informs patients that the occurrence of postoperative symptoms is quite normal and there is nothing to worry about; besides, the vagina is able to recover by itself. Any symptoms weaken with the passing of time. These detailed and comprehensive introductions did eliminate their concerns. In addition, the nursing staff instructed the patients to wear appropriate headgear, hat, and accessories, and to tailor their zippers in the light of venous PICC catheter used. This way, the patients have more confidence in their self-image that helps them to be positive with respect to their sexual life and medical compliance. Hence, they get a better quality of care. Several empowerment education activities teach patients to cope with their postoperative sexual lives with a peaceful mind and to actively follow the doctor's as well as the nurses' instructions that are designed to lower their decline in sexual function and improve their sexual lives.

In this paper, at 1-6 months after the operations, the SDS scores in the OG were lower than those in the CG ($P < 0.05$). The patients in the OG showed an awareness of disease of 85.71%, which was significantly higher than the 64.71% in the CG. During the same period of

time, the self-care ability scores in the OG were superior to those in the CG, and so were the quality of life scores at 3, and 6 months after the operations ($P < 0.05$). It is suggested that with empowerment education-based interventions, there is a larger extent to which the severity of depression is reduced, plus the patients' self-care abilities and quality of life are improved. Many studies have confirmed that the existence of psychological disorders is an important cause of poorer postoperative sexual life, such as being self-abased due to the loss of female organs, or the fear of pain during sexual intercourse, rejection by one's husband, or the recurrence of cancer caused by sex, and so on [23, 24]. An improved depressive state, awareness, self-care ability, and quality of life after the empowerment education intervention is explained by the nurses communicating with patients, where they lead them to talk from their hearts and then by education or discussions introduce them to a greater knowledge of the disease and rehabilitation. By communicating, the patients vent their negative emotions to nurses who of course listen patiently and show respect so as to help them feel relaxed. Furthermore, continuous planning under the guidance of the nursing staff leads patients to a comprehensive understanding of the disease and therefore self-care. The improved awareness helps patients be compliant with nursing while their enhanced self-care ability ensures that the patients enjoy high-quality self-care when the caregivers are absent.

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In summary, empowerment education-based nursing interventions for cervical cancer patients of child-bearing age reduce the postoperative decline in sexual function and accelerate the improvement of depression, awareness, and self-care abilities. These lead to an improved quality of life. Patients show more satisfaction with the nursing. However, the small sample size in this study made for a lack of comprehensiveness in our results, which were also subject to biases due to insufficient postoperative follow-up. An evaluation of the long-term effects of the described invention was not possible. Future studies should focus on an intensive study with a larger sample size and more variables.

Disclosure of conflict of interest

None.

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