

## Original Article

# Effect of a comprehensive nursing care on the treatment of ulcerative keratitis and patient's emotions

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**Abstract:** Objective: Our aim was to investigate the effect of a comprehensive nursing care on the treatment of ulcerative keratitis and patients' emotions. Methods: A total of 92 patients who were treated for ulcerative keratitis in the Department of Ophthalmology in Affiliated Hospital of Jining Medical University between October 2015 and October 2017 were selected for this study and were assigned into either the study group or the control group (46 cases in each group). Patients in the control group received routine nursing care while patients in the study group were given comprehensive nursing care. Patients' emotions, treatment effect, patient satisfaction, quality of life and recurrence rate were analyzed and compared between the two groups. Results: Before the nursing care, the scores of the self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were similar in the two groups (both  $P > 0.05$ ), whereas after the nursing care, patients in the study group had lower SAS and SDS scores and recurrence rate, better treatment effect and quality of life, and higher patient satisfaction than those in the control group (all  $P < 0.05$ ). Conclusion: A comprehensive nursing care can effectively improve patient's mood and quality of life as well as reduce the recurrence rate in patients with ulcerative keratitis. This nursing program is able to achieve good results and is well accepted by patients, which can be recommended for clinical application.

**Keywords:** Comprehensive nursing care, ulcerative keratitis, treatment effect, emotion

## Introduction

Ulcerative keratitis is a common inflammatory eye disease that impairs the visual function. In most cases, the disease is caused by the bacterial or viral infection following corneal damage. Decreased vision or even blindness can occur if patient is not treated immediately and properly. Once the diagnosis of the disease is confirmed, some symptomatic treatments, such as anti-infective therapy, should be performed in a timely manner for improving patient's visual function. During the treatment, patients will often undergo high levels of mental stress due to their lack of knowledge of the disease, facial appearance change, vision decline and pain, which can severely affect patient compliance with the treatment and thus reducing the treatment effects [1]. With the development of medical services, a comprehensive nursing care has been gradually applied clinically and has achieved some good

results. This program pays more attention to individual differences and addresses various aspects including psychological and mental needs in the intervention. Compared with a conventional nursing care, a comprehensive nursing care has more advantages and is more humanized, which has been well recognized by clinical workers. In our present study, we randomly selected 92 patients who were treated in the Department of Ophthalmology in Affiliated Hospital of Jining Medical University for ulcerative keratitis between October 2015 and October 2017 and investigated the effect of a comprehensive nursing care on the treatment of ulcerative keratitis and patient's emotions.

## Materials and methods

### Baseline data

A total of 92 patients who were treated in the Department of Ophthalmology in Affiliated Hospital of Jining Medical University for ulcer-

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ative keratitis between October 2015 and October 2017 were chosen as study subjects. All of them met the diagnostic criteria of ulcerative keratitis as defined by ophthalmic diseases [2]. Patients were assigned to either the study group or the control group according to the random number table (46 cases in each group). Patients' characteristics in the study group were as follows: female to male ratio, 20:26; age range, 20-72 years ( $46.81 \pm 9.62$  years); course of disease, 2-10 months ( $6.33 \pm 2.34$  months); there were 5 cases of fungal corneal ulcer, 19 cases of viral corneal ulcer and 22 cases of bacterial corneal ulcer. Patients' characteristics in the control group were: female to male ratio, 22:24; age range, 22-71 years ( $46.55 \pm 8.36$  years); course of disease, 3-10 months ( $6.67 \pm 2.88$  months); there were 7 cases of fungal corneal ulcer, 20 cases of viral corneal ulcer and 19 cases of bacterial corneal ulcer. The baseline data in the two groups were similar (all  $P > 0.05$ ), indicating the results of the study were comparable. Patients with other type of eye diseases or mental disorder were not included in this research. The study was approved by the Ethnic Committee of the Affiliated Hospital of Jining Medical University and the informed consent was obtained from the participants and their family members.

### *Methods*

Patients in the control group received routine nursing care including monitoring of patient's vital signs and conditions and implementation of therapies and cares according to doctor's instructions. Meanwhile, patients were informed of the requirements that need to be followed during the hospitalization.

Patients in the study group received the comprehensive nursing care as follows: 1) health education: Nurses proactively explained to patients the cause, clinical characteristics and prognosis of ulcerative keratitis as well as their treatment methods; nurses also provided detailed answers to the related questions from patients and their family members, in order to help patients to can get a better understanding of this disease; meanwhile, patients were informed of the importance and necessity of regular eye check-ups through which clinicians can get to know about the progress of patient's

recovery in a timely manner [3, 4]; 2) emotional care: Nurses enhanced communications with patients and provided targeted psychological counseling that took into account patient's educational background, family situations and emotional changes, so that their anxiety and depression can be minimized; success stories of ulcerative keratitis treatment were also shared with patients as an encouragement for building their confidence in the treatment [5, 6]; 3) improvement of ward environment: bed sheets and quilt covers were changed on a daily basis; rooms were kept well-ventilated by opening the windows regularly; UV disinfection was performed in the ward on a regular basis; a suitable amount of plants and flowers were placed in the room for creating a warm and comfortable atmosphere; 4) targeted eye care: Nursing staff strengthened the eye care on patients who had excessive eye discharge; nurses told the patients not to rub the eye and the eye cleaning must be done by nursing staff using clean warm water and sterile gauze to prevent cross-contamination; patients were instructed to keep good hygiene practice and nurses strictly followed the medication instructions regarding the administration method, dosage and time; hormone drugs were not allowed in patients with fungal or viral infections to avoid aggravation of the condition [7, 8]; 5) dietary care: During the treatment, patients were asked to have a light and balanced diet with a sufficient supply of nutrients especially vitamins, proteins and energy; personalized diet plans were created to enhance patients' immune functions, the plan took into account patients' diet habits and preferences and patients were instructed to avoid cold, irritating and spicy food [9, 10].

### *Outcome measures*

Patients' emotions: Patients' emotions were assessed using the self-rating depression scale (SDS) and self-rating anxiety scale (SAS) before and after the nursing care. A score of over 50 in SDS indicated presence of depression. Both scores were inversely correlated with the degree of depression or anxiety [11, 12].

Treatment effect: Patient was considered to be healed if the vision returned to normal, the ocular symptoms were almost gone and patient's life was not affected; patient was considered to

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**Table 1.** Comparison of baseline data in the two groups

	Control group (n=46)	Study group (n=46)	t/ $\chi^2$	P
Age (mean $\pm$ sd, year)	46.55 $\pm$ 8.36	46.81 $\pm$ 9.62	0.1383	0.8903
Course of disease (mean $\pm$ sd, month)	6.67 $\pm$ 2.88	6.33 $\pm$ 2.34	0.6214	0.5359
Type of disease (n, %)				
Fungal	7 (15.22)	5 (10.87)	0.3833	0.5358
Viral	20 (43.48)	19 (41.30)	0.1793	0.6719
Bacterial	19 (41.30)	22 (47.83)	0.3960	0.5292

**Table 2.** Comparison of patients' emotions in the two groups (mean  $\pm$  sd)

	SAS				SDS			
	BN	AN	t	P	BN	AN	t	P
Control group (n=46)	58.03 $\pm$ 5.67	39.86 $\pm$ 5.37	15.7805	0.0000	58.32 $\pm$ 5.51	50.86 $\pm$ 5.38	6.5701	0.0000
Study group (n=46)	57.47 $\pm$ 6.17	31.13 $\pm$ 4.17	23.9891	0.0000	58.22 $\pm$ 5.67	41.06 $\pm$ 3.17	17.9164	0.0000
t	0.4532	8.7086			0.0857	10.6441		
P	0.6515	0.0000			0.9318	0.0000		

Note: SAS, self-rating anxiety scale; SDS, self-rating depression scale; BN, before nursing care; AN, after nursing care.

**Table 3.** Comparison of treatment effect in the two groups

	Healed	Effective	Ineffective	Effective rate
Study group (n=46)	19 (41.30%)	25 (54.35%)	2 (4.35%)	44 (95.65%)
Control group (n=46)	12 (26.09%)	22 (47.83%)	12 (26.08%)	34 (73.92%)
$\chi^2$				8.4249
P				0.0037

have an effective treatment if the improvement in patient's eyesight was over 50%, the improvement in the ocular symptoms were significant and patient's life was only slightly affected; patient was considered to have an ineffective treatment if the vision and ocular symptoms were not improved noticeably or even became worse and patient's life was severely affected. Effective rate was the sum number of patients who were healed or had an effective treatment divided by total number of cases [13].

**Patient satisfaction:** A questionnaire made by the Department of Ophthalmology in Affiliated Hospital of Jining Medical University was employed for assessing patient satisfaction. The results were classified into three groups which were very satisfied, satisfied and dissatisfied. Percentage of satisfied patients was the sum of number of patients who were satisfied or very satisfied divided by the total number of cases.

**Quality of life:** Patient's quality of life before and after the nursing care was evaluated by the Short Form (36) Health Survey (SF-36) which

consisted of the following sections: mental health (MH), vitality (VT), role-emotional (RE), social functioning (SF), general health perceptions (GH), physical functioning (PF), bodily pain (BP) and role-physical

(RP). Scores were on a scale of 0-100. A higher score indicated greater quality of life.

**Recurrence rate:** Recurrence rate was calculated in the two groups after five months of follow-up.

### Statistical analysis

Statistical software SPSS 24.0 was applied for the data analysis. Measurement data (quality of life and emotions) are presented as mean  $\pm$  standard deviation and t test was performed. Count data (treatment effect, patient satisfaction and recurrence rate) are expressed as number or percentage (n, %) and  $\chi^2$  test was performed. A value of  $P < 0.05$  is considered as statistically significant.

## Results

### Baseline data in the two groups

There were no intergroup differences in age, type of disease, gender or other baseline data between the two groups (all  $P > 0.05$ ). See **Table 1**.

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**Table 4.** Comparison of patient satisfaction in the two groups

	Very satisfied	Satisfied	Dissatisfied	Percentage of satisfied patients
Study group (n=46)	19 (41.31%)	26 (56.52%)	1 (2.17%)	45 (97.83%)
Control group (n=46)	14 (30.44%)	21 (45.65%)	11 (23.91%)	35 (76.09%)
$\chi^2$				9.5833
P				0.0019

## Patients' emotions in the two groups

The SAS and SDS scores before the nursing care were similar between the two groups (both  $P > 0.05$ ), while after the nursing

program, the SAS and SDS scores in the study group were lower than those in the control group (both  $P < 0.05$ ). It was found that scores in both groups decreased significantly following the nursing care and the reductions in the study group were greater (all  $P < 0.05$ ). See **Table 2**.

## Treatment effect in the two groups

The treatment effect in the study group was much better than that in the control group (95.65% vs. 73.92%,  $P < 0.05$ ). See **Table 3**.

## Patient satisfaction in the two groups

The percentage of satisfied patients was much greater in the study group than in the control group (97.83% vs. 76.09%,  $P < 0.05$ ). See **Table 4**.

## SF-36 scores in the two groups

The SF-36 scores assessing the eight health concepts were similar between the two groups before the nursing care (all  $P > 0.05$ ), however, after the nursing care, the scores in the study group were much higher than those in the control group (all  $P < 0.05$ ). See **Table 5**.

## Recurrence rate in the two groups

The recurrence rate in the study group was markedly lower than that in the control group (2.17% vs. 21.74%,  $P < 0.05$ ) during five months of follow-up. See **Table 6**.

## Discussion

The major clinical manifestation of ulcerative keratitis is severe inflammation with symptoms such as edema, pain in the eye and epiphora. If patients are not given an effective treatment, loss of vision can occur and some patients may even have to undergo eye enucleation [14]. Due to the development of medical technologies,

**Table 5.** Comparison of SF-36 scores in the two groups (mean  $\pm$  sd)

	Study group (n=46)	Control group (n=46)	t	P
MH				
BN	62.35 $\pm$ 5.13	62.41 $\pm$ 5.06	0.0564	0.9551
AN	88.69 $\pm$ 6.28	72.13 $\pm$ 5.14	13.8399	0.0000
RE				
BN	65.77 $\pm$ 6.19	65.64 $\pm$ 6.13	0.1012	0.9196
AN	90.26 $\pm$ 7.02	73.26 $\pm$ 6.28	12.2410	0.0000
SF				
BN	59.26 $\pm$ 5.13	59.34 $\pm$ 5.22	0.0741	0.9411
AN	89.62 $\pm$ 6.18	70.06 $\pm$ 4.16	17.8077	0.0000
VT				
BN	60.23 $\pm$ 6.34	60.22 $\pm$ 6.28	0.0076	0.9940
AN	88.62 $\pm$ 7.06	70.03 $\pm$ 6.04	13.5703	0.0000
GH				
BN	59.66 $\pm$ 2.68	59.63 $\pm$ 2.57	0.0547	0.9564
AN	86.02 $\pm$ 6.14	69.06 $\pm$ 3.15	16.6686	0.0000
BP				
BN	61.76 $\pm$ 4.61	61.75 $\pm$ 4.63	0.0103	0.9917
AN	88.06 $\pm$ 8.14	71.11 $\pm$ 6.28	12.1818	0.0000
RP				
BN	60.38 $\pm$ 4.29	60.32 $\pm$ 4.28	0.0671	0.9466
AN	83.27 $\pm$ 7.61	70.64 $\pm$ 5.29	9.2426	0.0000
PF				
BN	62.55 $\pm$ 4.16	62.46 $\pm$ 4.29	0.1021	0.9189
AN	87.25 $\pm$ 6.69	72.84 $\pm$ 5.55	11.2434	0.0000

Note: SF-36, Short Form (36) Health Survey; MH, mental health; VT, vitality; RE, role-emotional; SF, social functioning; GH, general health perceptions; PF, physical functioning; BP, bodily pain; RP, role-physical; BN, before nursing care; AN, after nursing care.

**Table 6.** Comparison of recurrence rate in the two groups

	Recurrence	Recurrence rate
Study group (n=46)	1	2.17%
Control group (n=46)	10	21.74%
$\chi^2$	8.3636	
P	0.0038	

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treatment methods for ulcerative keratitis have been improved and good prognosis can be achieved in patients. However, since the course of disease is long and there can be changes in pathological features, such as occurrence of serpiginous keratitis and pseudomonas keratitis, patients are prone to have negative emotions during the treatment. These negative emotions can severely affect patient compliance and discourage them to follow good hygiene practice, thus reducing the treatment effects and affecting the prognosis [15, 16]. In addition, emotional fluctuations can cause an increase in eye discharge which can aggravate the inflammatory response in eyes. Therefore, it is quite necessary to provide a good comprehensive nursing care to facilitate the clinical treatment of ulcerative keratitis [17, 18].

The comprehensive nursing care refers to a holistic and high-quality nursing care model that is individualized and patient centered. This nursing program enhances the care in various aspects including patient's eye hygiene practice, diet, daily life, emotions, health education and ward environment. In contrast to a conventional nursing care, a comprehensive nursing care pays more attention to patient's emotional changes, shows empathy to patients who are experiencing suffering and provides targeted psychological counselling in a timely manner to relieve the negative emotions in patients. Moreover, the comprehensive nursing program also enhances the nutritional support; and for patients with some other diseases such as diabetes, high blood pressure or gastrointestinal diseases, tailor-made diet plans with appropriate control on sugar and salt intake are provided based on patients' condition and diet habits in order to meet their nutritional needs during the treatment as much as possible. Meanwhile, the ward environment is improved for creating a comfortable atmosphere which helps patients to get better sleep and is conducive to their recovery [19, 20]. The results of our study showed that the treatment effect, patient satisfaction and quality of life in the study group were all significantly greater than those in the control group, whereas the SAS and SDS scores and the recurrent rate in the study group were lower. These findings demonstrated that a comprehensive nursing care is practical and effective for patients with ulcerative keratitis and has high clinical value. However, since the sample size in this study is relatively small, a

study with a larger sample size would be necessary in the future for further verification and for providing a more scientific and precise basis for the implementation of this nursing program on patients with ulcerative keratitis.

In conclusion, a comprehensive nursing care can markedly relieve the negative emotions and improve the quality of life in patients with ulcerative keratitis, which is well recognized and accepted by patients. This nursing program has high clinical value and can be promoted for a wide application.

### Disclosure of conflict of interest

None.

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