

Original Article

Effectiveness of risk awareness nursing combined with intensified recovery nursing for patients with senile cataract after operation

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Abstract: To explore the effectiveness of risk awareness nursing combined with intensified recovery nursing for senile cataract patients after operation. One hundred and twenty patients diagnosed with senile cataract admitted to our hospital from June 2018 to December 2019 were selected. All patients were treated with ultrasonic emulsification. They were divided into the control group (n=60) and observation group (n=60) based on random number method. The routine nursing program was applied in the control group and the risk awareness nursing combined with intensified recovery nursing was applied in the observation group. The visual acuity and intraocular pressure, changes of mental state before and after nursing, quality of life and the occurrence of adverse reactions of the two groups of patients before discharge were evaluated and analyzed. The total effective rate (95.00%), postoperative visual acuity (0.68 ± 0.05) and SF-36 score (82.37 ± 4.13) of the observation group were significantly higher than those of the control group (75.00%, 0.55 ± 0.02 and 70.06 ± 3.42), while the average intraocular pressure (10.65 ± 2.46), incidence of adverse reactions (3.33%), SAS score (16.79 ± 2.31) and SDS (18.23 ± 2.05) score after nursing were significantly lower than those of the control group (11.03) ($P < 0.05$); SAS score (39.23 ± 3.46) and SDS score (36.56 ± 3.12) were significantly higher than those of the control group (38.47 ± 3.52) and (35.26 ± 3.08) nursing ($P < 0.05$). Risk awareness nursing combined with intensified recovery nursing treatment for patients with senile cataract after emulsification is effective. It will improve the effect of surgical treatment and the psychological state of the patients, so as to improve the quality of life and promote rapid physical rehabilitation for patients.

Keywords: Cataract, emulsification treatment, risk awareness nursing, intensified recovery nursing, adverse reaction

Introduction

Kelman invented the first ultrasound emulsification instrument in 1967. Senile cataract is a clouding of the lens in the aging eye leading to a decrease in vision. Symptoms may include faded colors, blurry vision, halos around light, trouble with bright lights, and trouble seeing at night. This may result in trouble driving, reading, or recognizing faces [1]. With the aging of China's population in recent years, the incidence of cataracts is increasing yearly. The relevant surveys show that the blindness rate of cataract is as high as 30%, which has become one of the important factors leading to blindness for the elderly [2, 3]. At present, the operation of senile cataract is changed from traditional cataract operation to emulsification

operation. The surgery is mainly performed by implanting intraocular lens to achieve ideal therapeutic effect, maintaining the advantages such as small injury, short operation time, light pain and quick postoperative recovery [4, 5].

However, the surgery is invasive to a certain extent, requiring sometime for postoperative recovery. The recovery nursing at this stage is particularly critical for the prognosis. It was reported that informative, educational and planned nursing care had a significant impact on anxiety levels in patients who had cataract surgery [6].

Therefore, we evaluated the effectiveness of risk awareness nursing combined with intensified recovery nursing for patients with senile cataract after emulsification treatment.

Methods

Patients

One hundred and twenty patients diagnosed with senile cataract admitted to our hospital from 2018 to December 2019 were selected. They were divided into the control group (n=60) and observation group (n=60) based on random number method. The inclusion criteria were: ① met the diagnostic criteria of senile cataract through relevant clinical examinations [6]; ② over 60 years; ③ the visual acuity was below 0.03 before surgery; ④ consented to participate in the study and informed family members; ⑤ approved by the ethics committee of the hospital. The exclusion criteria were: ① surgical contraindications; ② accompanied by mental illness or cognitive impairment; ③ incomplete functions of heart, liver, kidney or lung; ④ language barrier; ⑤ incomplete clinical data and midway dropout.

All patients were divided into the observation group (60 patients) and the control group (60 patients) based on the different postoperative nursing plans. The routine nursing program was applied in the control group and the risk awareness nursing combined with intensified recovery nursing was applied in the observation group.

Intervention

Patients of both groups were treated with successful emulsification surgery, and then postoperative nursing intervention was administrated. Routine nursing plan was taken in the control group. The nursing service was provided for patients in accordance with the procedures and specifications for ophthalmologic nursing, such as instructions for drug use, eye care, health education and etc. Postoperative precautions were instructed, relatives of patients were informed to pay more attention, and the quiet rest environment was provided for patients. Treatment was conducted in a timely manner in case of abnormal situations.

Risk awareness nursing combined with intensified recovery nursing plan was taken in the observation group. Risk awareness nursing: (1) risk evaluation: the team of risk awareness nursing was composed of the head nurse, physician and nursing staff with rich experience. The head nurse acted as the team leader who

was responsible for organization, development and implementation of risk awareness nursing. They would establish the system for assessment of risk awareness nursing through access to the data concerning senile cataract surgery risk factor, based on the patient's condition development, hospitalization, intraoperative problems, potential nursing risks and other aspects. The specific implementation plan on risk awareness nursing was worked out in compliance with the likely risk factors, such as drug cognitive deficiency, weak safety awareness, and poor capacity of handling emergencies.

Install non-slip mats and vertical handrails for hand-washing in the ward, install floor lights and turn them on at night, replace lighting facilities in corridors and toilets, add bed sheets in bedside, provide patients with antiskid shoe, inform patients of the location, use method, and precautions of the emergency call system. Set the bedside sign and wrist band, set risk prevention signs in prominent locations and improve the precautionary measures based on the causes of risk factors, allocate human resources for nursing in a rational way and strengthen the patrol frequency when patients take meals and wash, to avoid falls and other conditions for patients.

Recovery nursing operation: (1) Nursing staff correctly understood the nursing operation, preoperative preparation of relevant surgical instruments, and checked whether the instruments were in working state. At the same time, the existing operation error accidents were predicted and classified, and the patients were dynamically detected to avoid mistakes. (2) Eye preparation: preoperative lacrimal duct irrigation with normal saline. Patients were told not to cough, sneezing, etc. If they could not be controlled, use the tongue against the roof of the mouth with gold to alleviate the impulse, so as to ensure the smooth operation. (3) Doctor-patient communication: introduce the operation procedure, operation time, operation method and equipment for the patients and their families. (4) Complication nursing: pay close attention to the postoperative symptoms of patients. If the patient had vision decline and severe pain, doctors were notified timely for treatment.

Patients were advised to keep adequate rest after surgery, and not to overdo activities, rub their eyes, sneeze, cough and lower their heads

suddenly. Patients were kept in horizontal position for at least 24 h after surgery to relax the heads. For intraocular bleeding during operation, the head was raised appropriately. Otherwise, semi-decubitus position was adopted to let blood sink into eyes to avoid affecting post-operative vision. The off-bed activities were available 24 h after surgery, and meanwhile, the dressing was kept dry and clean during eating and washing. Keep close watch on the dressing and the wound to see if there was any exfoliation, conjunctival secretion or eyelid redness and swelling. Instructed patients on the correct method when using eye drops, told them to make sure the hands were clean before dripping, and not to press the eyeball hard after dripping to avoid wound bleeding or displacement of intraocular lens.

Requirements for diet: made a scientific and reasonable diet plan based on the patients' physical conditions, encouraged the patients to take more foods rich in vitamins, high quality protein, crude fiber and light and easy to digest, and eat more fresh fruits and melons to help the wound heal faster.

Semi-liquid food was given firstly for those being worn out with age. Smaller meals and frequent snacks were encouraged. The caloric intake was controlled in case of concomitant diabetes to avoid adverse events and influence on postoperative recovery.

Discharge instructions: the discharge instruction manual was made by the nursing team with easy-to-understand words and sudden changes, which mainly included the method to use eye drops, return time, precautions for activity and rest, maintenance of eye hygiene, nutrition guidance, attention to warmth and emotional control.

Questionnaires were used to investigate the eyesight of patients, and SPSS and other software were used to carry out statistical analysis on the data of patients. The targeted nursing was applied to the patients according to the results of the visual acuity survey.

Observation index

Evaluation of therapeutic efficiency: The post-operative efficacy of patients was evaluated

based on the visual acuity questionnaire, and the higher the score, the worse the effect.

After nursing, the patients' visual acuity returned to normal value. The clinical symptoms such as fear of light, blurred vision and darker color were completely eliminated, which indicated well recovery.

After nursing, the patients' visual acuity level tended to be normal. The clinical symptoms such as fear of light, blurred vision and darker color of the object were significantly improved, while few adverse reactions occurred, and the questionnaires with 15-25 points were defined as effective recovery ([Supplementary File](#)).

After nursing, the patients' visual acuity level tended to be normal, and the improvement of clinical symptoms was not obvious. More adverse reactions occurred, which indicated invalid.

Psychological status: The psychological status changes of the two groups were scored before and after nursing according to anxiety (SAS) rating scale and depression (SDS) rating scale. The full score of both scales was 50 points. The lower the score was, the better the psychological status was. The patients in both groups were measured for three times, and the average value was taken.

Visual acuity and intraocular pressure: The visual acuity and intraocular pressure of the two groups before discharge were recorded. The postoperative quality of life of the two groups was scored according to the quality of life (SF-36) assessment criteria, which mainly included mental health, social function, physical health, emotional function. The centesimal system was applied. The higher the score was, the better the life condition and recovery from prognosis were.

Adverse events: The adverse events occurred in the postoperative nursing of patients in the two groups were analyzed.

Statistical analysis

The data were analyzed using SPSS 22.0. The counting data were represented with number or percentage. Measurement data were represented with mean $\pm$ standard deviation ($\bar{x} \pm sd$). The comparison of independence, normal-

Table 1. Comparison of general data of the two groups of patients

Group	Cases	Gender [n (%)]		Sick Eyes [n (%)]		Average age (Years)	Average Course of Disease (Years)
		Male	Female	One-sided	Two-sided		
Observation group	60	36 (60.00)	24 (40.00)	50 (83.33)	10 (16.67)	74.27±2.75	2.32±0.64
Control group	60	35 (58.33)	25 (41.67)	49 (81.67)	11 (18.33)	75.23±2.05	2.30±0.58
χ^2/t	-	0.057		0.095		0.158	0.473
P	-	0.810		0.757		0.874	0.637

Table 2. Comparison of treatment effect between two groups of patients [n (%)]

Groups	Cases	Marked effect	Effective effect	Invalid effect	Total Efficiency
Observation group	60	30 (50.00)	27 (45.00)	3 (5.00)	57 (95.00)
Control group	60	20 (33.33)	25 (41.67)	15 (25.00)	45 (75.00)
Z	-	5.716	0.225	15.686	15.686
P	-	<0.01	>0.01	<0.01	<0.01

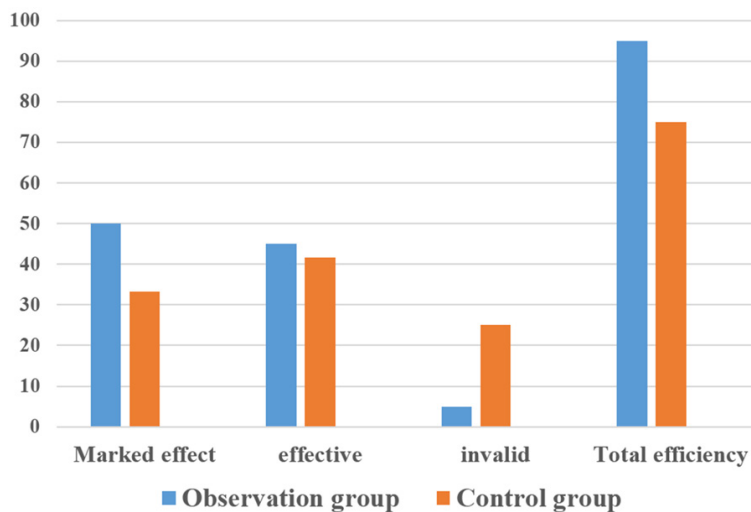


Figure 1. Comparison of treatment effect between two groups of patients.

ity and equal variance between the two groups were inspected with t test and $P < 0.05$ was considered as statistically significant. The rank sum test (Z) was used to analyze the difference between the treatment effect and the incidence of adverse reactions, while $P < 0.01$ was considered as statistically significant.

Results

Basic characteristics

There were 36 males in observation group, and 35 males in control group. The average age of observation group was 74.27 ± 2.75 years old, while it was 75.23 ± 2.05 years old in control group ($P > 0.05$). There were no significant differences in gender, sick eyes, age and disease

course between the two groups ($P > 0.05$) (Table 1).

Comparison of treatment effect between the two groups

The variance analysis showed that the patients defined as well recovered and the total effective rate of treatment in the observation group were significantly higher than those in the control group ($P < 0.01$). The number of patients defined as invalid treatment was significantly smaller than that in the control group ($P < 0.01$) (Table 2; Figure 1).

Comparison of changes in mental state before and after nursing between the two groups

The variance analysis showed that the SAS and SDS scores of the two groups decreased significantly after nursing compared with those before treatment. It seems that the decrease of SAS and SDS scores of the observation group was more significant compared with that of the control group ($P < 0.05$) (Table 3; Figure 2).

Comparison of visual acuity, intraocular pressure and life quality between the two groups before discharge

The variance analysis showed that the postoperative visual acuity and SF-36 score of the observation group were higher than those of

Table 3. Comparison of changes in mental state before and after nursing between the two groups of patients ($\bar{x} \pm \text{sd}$, points)

Groups	Cases	SAS Score		SDS Score	
		Before Nursing	After Nursing	Before Nursing	After Nursing
Observation group	60	39.23 $\pm$ 3.46	16.79 $\pm$ 2.31*	36.56 $\pm$ 3.12	18.23 $\pm$ 2.05*
Control group	60	38.47 $\pm$ 3.52	23.47 $\pm$ 2.58*	35.26 $\pm$ 3.08	25.69 $\pm$ 2.78*
t	-	0.080	10.284	0.021	12.269
P	-	0.926	0.000	0.365	0.000

Compared with that before treatment, *P<0.05.

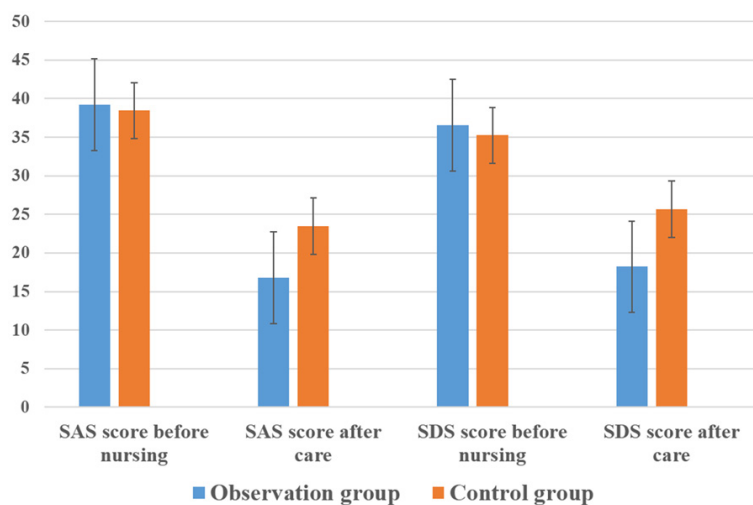


Figure 2. Comparison of changes in mental state before and after nursing between the two groups of patients.

the control group, and the intraocular pressure was lower than that of the control group ($P < 0.05$) (Table 4).

Comparison of postoperative adverse events between the two groups

The variance analysis showed that the incidence of postoperative adverse events (3.33%) in the observation group was lower than that in the control group (11.67%) (Table 5).

Discussion

Senile cataract and glaucoma are common diseases, the incidence of which increases steeply past the age of 60 years. Senile cataract is defined as the opacity of the lens of the eye or its capsule, with no obvious cause, occurring in people over the age of 50 years [7].

The opacity is due to protein aggregates that are formed for unknown reasons. There are

some risk factors that facilitate the age dependent opacification, including family history, diabetes, smoking and solar exposure [7]. Though the pathogenesis of cataract has not been fully elucidated yet, a large number of studies have shown that it may be closely related to genetics, lens metabolism, nutrition, hypertension, diabetes, atherosclerosis or other factors [8, 9]. It has been verified that cataracts will make turbid crystalline lens interfere with optical fiber and disable accurate projection onto the retina, resulting in monocular diplopia, glare sensation, blurred field of vision and other clinical symptoms [10].

Therefore, the turbidity of crystalline lens might be the main cause of cataract. If the patients received high-quality postoperative nursing, it could actively reduce postoperative complications and help the patients recover to health as soon as possible. Therefore, this study investigated the postoperative nursing mode of the patients.

At present, senile cataract is mainly treated by surgery, such as ultrasonic emulsification surgery and non-ultrasonic emulsification surgery. As a common surgery method applied in ophthalmology, the cataract extraction through non-ultrasonic emulsification is characterized by low cost and convenient operation. However, Foster [10] and Ramke et al. [11] reported that the uncorrected visual acuity treated through non-ultrasonic emulsification was far less than ultrasonic emulsification, as the former would injure the corner tissue and blood-room barrier to some extent. Meanwhile, Kamiya et al.

Table 4. Comparison of postoperative visual acuity, intraocular pressure and life quality between the two groups of patients ($x \pm sd$)

Groups	Cases	Postoperative visual Acuity	Postoperative intraocular pressure (mmHg)	SF-36 score (points)
Observation group	60	0.68±0.05	10.65±2.46	82.37±4.13
Control group	60	0.55±0.02	11.03±3.11	70.06±3.42
t	-	22.456	20.781	13.764
P	-	0.000	0.000	0.000

Table 5. Comparison of postoperative adverse reactions between the two groups of patients [n (%)]

Groups	Cases	Vitreum lose	Intraocular pressure increase	Corneal edema	Iridoptosis	Total incidence rate
Observation group	60	0 (0.00)	1 (1.67)	1 (1.67)	0 (0.00)	2 (3.33)
Control group	60	1 (1.67)	3 (5.00)	2 (3.33)	1 (1.67)	7 (11.67)
χ^2	-	1.684	1.719	0.565	1.684	5.013
P	-	>0.01	>0.01	>0.01	>0.01	<0.01

reported [12] that the incidence of iris collapse and corneal edema treated by non-phacoemulsification was 23.45%, higher than that treated by phacoemulsification. It is known from the above related studies that ultrasonic emulsification is more suitable for senile cataract surgery. Therefore, postoperative recovery intervention should also be combined to improve the prognosis of patients and promote physical recovery. Considering that ultrasonic emulsification is performed with the aid of related instruments under high negative pressure, it would control the forward movement of nuclear mass, thereby reducing the occurrence of corneal endothelial injury and the incidence of corneal edema. Meanwhile, it has been confirmed that the iris will not be exposed, which may reduce the patients' discomfort and make postoperative recovery faster [13]. However, all kinds of surgical treatment would bring trauma to the patients; therefore postoperative recovery and intervention are necessary for the prognosis and physical rehabilitation.

When patients are receiving nursing, it is necessary to consider the difference of the surgeon's own physical state and operation time, and arrange a reasonable nursing plan. In our study, the application of risk awareness nursing combined with intensified recovery nursing in the observation group was better than that in the control group in terms of efficacy and postoperative recovery, which is similar to the results of a previous study [14], indicating that

this program was highly feasible and effective. After receiving intraocular lens implantation, the patient should cover the eye pad, use antibiotic eye drops and normal saline to gently clean the eyelid. At the same time, patients' intraocular pressure, visual acuity, etc., were regularly measured to ensure the rehabilitation and nursing effect of patients [13]. Meanwhile, the corneal incision drainage could effectively reduce intraocular pressure, release inflammatory cells and other substances, but the nursing staff should apply accurate operation, and explain the operation process to the patient, so as to improve patient compliance. Patients with senile cataract are special, with weak postoperative vision, low cognitive level and poor sense of self-protection. Risk awareness nursing will provide effective guarantee for cataract surgery. The nursing process will be more professional, scientific and safe by establishing risk awareness nursing team and allocating risk nursing resources. Risks can be controlled to the greatest extent to ensure the safety of postoperative recovery for patients by evaluating the postoperative risk factors of patients and consulting relevant data [15, 16]. The nursing quality and knowledge of nurse can be improved to promote patients mastering of the correct risk prevention skills. Meanwhile, SDS and SAS scores of the observation group after nursing were far lower than those of the control group, which indicated that the homologous intervention granted based on the psychological state of patients would enhance the

patients' confidence of recovery, so as to relieve the anxiety and depression. In the study, SDS and SAS scores in the observation group after nursing were far lower than those of the control group, which also confirmed this point, and was the same as the result of Kumar [16]. After receiving appropriate psychological nursing, the patients could not only alleviate their own tension, anxiety and other states, but also improve self-control ability, reduce their own anxiety, excitement and other bad emotions, so as to avoid vascular contractions disorders, control vascular regulation center in a stable state, so as to help control intraocular pressure and protect vision [17-20]. In addition, the intervention through living guidance, requirements for diet and discharge instructions may be launched on patients directly by strengthening the health consciousness of patients and their families. In terms of diet, the scientific and reasonable plans should be provided upon the patients' physical conditions. Precautions after discharge need to be explained at the time of discharge, which will improve the patients' SF-36 score and accelerate their physical recovery. However, at present, the health education level of senile cataract patients in China is still uneven, and the overall quality of doctors varies greatly. This study will further perform multi-directional management of such patients in accordance with the concept of risk awareness, in order to study the nursing model suitable for China.

In conclusion, the risk awareness nursing combined with intensified recovery nursing after emulsification treatment for patients with senile cataract is effective, which is worthy of clinical application and promotion.

Disclosure of conflict of interest

None.

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Risk awareness nursing for senile cataract

Annex questionnaire survey on vision

No.	Question	Normal	Good	Ordinary	Weak
Points		1	2	3	4
1	How is your vision after wearing glasses?				
2	How does your eyesight affect your daily life?				
3	How difficult is it for you to see small objects, such as bugs?				
4	How difficult is it for you to see faces next to you?				
5	How difficult is it for you to see people across the road?				
6	How difficult is it for you to adapt from light to dark?				
7	How difficult is it for you to adapt from dark to light?				
8	How difficult is it for you to recognize colors?				
9	How difficult is it for you to get something off the table?				
10	How difficult is it for you to distinguish things in bright light?				