

Application of Nursing Intervention Guided by King's Interactive Standard Theory in Patients with Lumbar Disc Herniation Undergoing Conservative Treatment

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Fu *et al.*: Lumbar Disc Herniation Undergoing Conservative Treatment

To explore the application effect of nursing intervention guided by King's interactive standard theory in patients with lumbar disc herniation undergoing conservative treatment. Total of 136 patients with lumbar disc herniation admitted to our hospital from June 2019 to May 2020 were randomly divided into interactive nursing group and routine nursing group. The interactive nursing group was given nursing intervention guided by King's interactive standard theory and the routine nursing group was given routine nursing guidance. The disease cognition rate, incidence of adverse behavior, lumbar function and pain degree were compared between the two groups. The disease cognition rates of main symptoms, disease type, familiarity with conservative treatment, necessity of hard bed rest, feasible surgical treatment in severe cases and causes of disease in interactive nursing group were higher than those in routine nursing group ($p < 0.05$); the incidences of standing or sitting for a long time, smoking or bad eating habits, rest on a soft bed, carrying heavy objects, poor compliance and other adverse behaviors in the interactive nursing group were lower than those in the routine nursing group ($p < 0.05$); the range of flexion motion, lateral flexion motion and rotation motion of the interactive nursing group was higher than that of the routine nursing group ($p < 0.05$); after nursing, the visual analogue scale score of the interactive nursing group was lower than that of the routine nursing group ($p < 0.05$). The nursing intervention guided by King's interactive standard theory could improve the disease cognition rate of patients with lumbar disc herniation conservative treatment, reduce their bad acts, improve their lumbar function and relieve their pain.

Key words: King's interactive standard theory, lumbar disc herniation, bad act, lumbar function

Lumbar disc herniation (LDH) is a common orthopedic disease. It is prone to recurrent attacks, seriously affects patient's life and work and causes anxiety, depression and other adverse emotions. Most LDH patients can recover their working ability and improve their living quality through conservative treatment. Studies have shown that bed rest and back muscle exercise can effectively relieve pain, but overwork will cause repeated attacks of LDH^[1]. LDH patients are mostly middle-aged and elderly people. Clinical investigation shows that patients have low cognition of diseases, with lack of social support and poor compliance of rehabilitation exercise during conservative treatment^[2]. King's interactive compliance theory focuses on

interpersonal interaction, describing the correct cognition of nurses and patients on themselves, their roles and development. It holds that, nurse-patient relationship is the interactional relationship of personal system, interpersonal system and social system. In the process of nursing, it is necessary to improve patient's self-cognition of diseases and communication between nurses and patients^[3,4]. King's interactive compliance theory emphasizes patient's participation in nursing process and attaches importance to the positive role of nurse-patient interaction. In this study, based on King's interactive compliance theory, nursing intervention was given to patients with LDH undergoing conservative treatment, as reported below.

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MATERIALS AND METHODS

Research object:

136 LDH patients admitted to our hospital from June 2019 to May 2020 were randomly divided into interactive nursing group and routine nursing group. The interactive nursing group was given nursing intervention guided by King's interactive compliance theory, while the routine nursing group was given routine nursing guidance. There were 68 cases in interactive nursing group, with 30 male cases and 29 female cases. They were aged 29-67 y, with an average age of (43.06±6.83) y; education level: 26 cases of junior high school and below, 28 cases of high school/technical secondary school, 14 cases of junior college and above; their course of disease ranged from 1 to 7 y, with an average of (3.17±0.86) y. There were 68 cases in routine nursing group, with 42 male cases and 26 female cases. They were aged 31-69 y, with an average age of (43.816±6.95) y; education level: 30 cases of junior high school and below, 25 cases of high school/technical secondary school, 13 cases of junior college and above; their course of disease ranged from 10 mo to 6 y with an average of (3.39±1.03) y. There was no significant difference in general data between the two groups ($p>0.05$).

Inclusion and exclusion criteria:

Inclusion criteria-Typical symptoms and signs of LDH, straight leg elevation test $<60^\circ$, obvious lower limb symptoms, first attack; receiving conservative treatment voluntarily; no disturbance of consciousness and able to read and write; voluntarily participating in the study and signing the consent form.

Exclusion criteria-History of mental illness or cognitive dysfunction; women during pregnancy or lactation; complicated with malignant tumor.

Methods:

Conservative treatment: In acute edema stage, mannitol, dexamethasone and other drugs were used for dehydration treatment for 5 d and neurotrophic drugs were given for 14 d. Three-dimensional traction bed (produced by Jinan Huafei Industry Co., Ltd.) was used for traction treatment. Patients aged less than 65 y received traction treatment once a week, with 30 min each time, four times during the course of treatment. Patients aged over 65 y received traction treatment twice a week, with 10-20 min each

time, eight times in a course of treatment. Rolling and kneading methods were used in massage, from light to heavy and from slow to fast. Appropriate pulling and stretching were used twice a week, with 21 d as a course of treatment.

Routine nursing group: Routine nursing was given, including: health knowledge education: explaining the functions and effects of drug therapy, traction therapy and massage to patients, instructing patients in acute stage to stay in bed, gradually carry out activities after pain relief and avoid excessive activities; instructing patients to take reasonable diet during treatment. Lumbar functional exercise: mainly including forward flexion and backward extension, left-right rotation, flying-bird-type movement of lumbar back muscles and slow backward walk with support. Each action was repeated for 5-20 times and each exercise lasted for 20 min. Correct posture training: nurses instructed patients to take labor-saving actions, such as correct lying, standing and sitting postures. The exercise was taken once a day, with 30 min each time.

Interactive nursing group: Establishment of an interactive compliance group; the group consisted of attending doctors, rehabilitation therapists, psychological counselors and nurses, who had worked for more than 3 y and received training on King's interactive compliance theory. Establishment of perceptual interaction; when nurses and patients came into contact for the first time, the nurses interacted with patients in time, evaluated the patients educational level, disease cognition level and acceptance ability and established mutual trust with patients; the nurses collected patients data and evaluated their needs; at the same time, the nurses made self-introduction in detail to deepen mutual understanding, enhance mutual trust and form good perception and judgment, thus laying an emotional foundation for follow-up nursing. Establishment of a unified system: multi-form communication was carried out according to the characteristics of patient's personality, educational level and family support. For those with higher educational level, the nursing knowledge manuals of LDH were distributed and propaganda and education were carried out in combination with video. For those with lower educational level, the nurses focused on explaining the contents of the manual repeatedly, with the aim of reaching a consensus on the importance and necessity of LDH rehabilitation exercise and establishing

specific rehabilitation training objectives; after that, nurses, patients and their family members discussed together to formulate rehabilitation training plan. Nurses mainly gave guidance and explanation, while family members cooperated, supplemented and persuaded. Patients made their own decisions and asked questions. The three parties jointly established the methods and projects of rehabilitation training objectives, forming a unified system of restriction and interaction. Implementation and evaluation: before rehabilitation training, nurses designed the training contents into a form and patients carried on training according to the form content. Nurses and the patient's family members supervised the training and evaluated the effect in time; nurses mainly played the role of assistance, helping patients to act skillfully and encouraging them to complete each action diligently. Establishment of social support system and continuous interactive system: nurses invited patients with high enthusiasm and good effect of rehabilitation training to share their own experiences in rehabilitation training, thus encouraging other patients to actively participate and enhancing their confidence in rehabilitation; nurses also urged the patient's family members to give encouragement and care to patients; before discharge, nurses created WeChat group of patients and asked them to leave their telephone numbers and emails. After discharge, the responsible nurses got to know the patients through WeChat group, email and telephone, understood the progress and effect of their rehabilitation training and answered patients questions to realize interaction and feedback in time. Both groups received continuous nursing for 3 mo.

Observation indicators:

Disease cognition rate: After 3 mo of continuous nursing, the self-made questionnaire on disease-related knowledge was used to evaluate the disease cognition rates of the two groups, including the main symptoms of the disease, the type of the disease, familiarity with conservative treatment, the necessity of rest on a hard bed, feasible surgical treatment in severe cases and factors inducing the disease, etc.

Incidence of bad acts: After 3 mo of continuous nursing, the self-made questionnaire on bad acts was used to evaluate the incidence of bad acts in two groups, including standing or sitting for a long time, smoking or bad eating habits, rest on a soft bed, carrying heavy objects, poor compliance, etc.

Lumbar function: The lumbar function of patients was evaluated, including the range of flexion motion, lateral flexion motion and rotation motion. The evaluation was carried out after the first treatment and after continuous nursing for 3 mo.

Pain degree: Visual analogue scale (VAS) was used before and after nursing. The score ranges from 0 to 10 points. The higher the score is, the more severe the pain. The evaluation was carried out after the first treatment and after continuous nursing for 3 mo.

Statistical processing:

The counting data is expressed in percentage (%) and the χ^2 test or Fisher exact probability method is adopted. The measurement data was represented by ($\bar{x} \pm s$) and independent samples t-test or paired samples t-test was used, $p < 0.05$ indicated statistically significant difference. Statistical package for the social sciences (SPSS) 22.0 software was used for data processing.

RESULTS AND DISCUSSION

Comparison of disease cognition is done where the disease cognition rate of the interactive nursing group was higher than that of the routine nursing group ($p < 0.05$) (Table 1).

Comparison of the incidence of bad acts is done where the incidence of bad acts in interactive nursing group was lower than that in routine nursing group ($p < 0.05$) (Table 2).

Comparison of lumbar function between two groups is done where there was no significant difference in the range of flexion motion, lateral flexion motion and rotation motion between the two groups before nursing ($p > 0.05$). After nursing, the ranges of motion of flexion, lateral flexion and rotation of the two groups increased than those before nursing and the range of flexion motion, lateral flexion motion and rotation motion of the interactive nursing group was significantly larger than that of the routine nursing group ($p < 0.05$) (Table 3).

Comparison of pain degree is done where there was no significant difference in VAS score between the two groups before nursing ($p > 0.05$). After nursing, the VAS score of the interactive nursing group was lower than that of the routine nursing group ($p < 0.05$).

TABLE 1: COMPARISON OF DISEASE COGNITION RATE BETWEEN TWO GROUPS CASE (%)

Group	Main symptoms of disease	Type of disease	Familiar with conservative treatment	Necessity of rest on a hard bed	Feasible surgical treatment in severe cases	Factors inducing diseases
Interactive nursing group (n=68)	63 (92.65)	59 (86.76)	61 (89.71)	58 (85.29)	57 (83.82)	55 (80.88)
Routine nursing group (n=68)	34 (50.00)	32 (47.06)	27 (39.71)	37 (54.41)	35 (51.47)	39 (57.35)
χ^2	30.234	24.211	31.676	15.398	16.261	8.819
p	0.000	0.000	0.000	0.000	0.000	0.003

TABLE 2: COMPARISON OF THE INCIDENCE OF BAD ACTS BETWEEN TWO GROUPS CASE (%)

Group	Standing or sitting for a long time	Smoking or bad eating habits	Rest on a soft bed	Carrying heavy objects	Poor compliance
Interactive nursing group (n=68)	33 (48.53)	32 (47.06)	31 (45.59)	26 (38.24)	23 (33.82)
Routine nursing group (n=68)	52 (76.47)	47 (69.12)	50 (73.53)	45 (66.18)	48 (70.59)
χ^2	11.325	6.795	11.020	10.637	18.418
p	0.001	0.009	0.001	0.001	0.000

TABLE 3: COMPARISON OF LUMBAR FUNCTION BETWEEN TWO GROUPS ($\bar{x}\pm s$)

Group	Range of flexion motion		Range of lateral flexion motion		Range of rotation motion	
	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Interactive nursing group (n=68)	53.46 \pm 7.58	69.52 \pm 8.17	39.61 \pm 10.89	51.72 \pm 8.04	39.55 \pm 11.03	48.65 \pm 7.33
Routine nursing group (n=68)	54.01 \pm 8.45	63.70 \pm 9.21	40.32 \pm 9.95	44.83 \pm 7.56	38.14 \pm 10.29	43.70 \pm 8.68
t	0.400	3.898	0.397	5.148	0.771	18.182
p	0.690	0.000	0.692	0.000	0.442	0.000

TABLE 4: COMPARISON OF PAIN DEGREE BETWEEN TWO GROUPS ($\bar{x}\pm s$, POINT)

Group	Before nursing	After nursing	t	p
Interactive nursing group (n=68)	6.73 \pm 1.48	2.82 \pm 0.45	20.843	0.000
Routine nursing group (n=68)	6.50 \pm 1.34	3.66 \pm 1.57	11.346	0.000
t	0.937	4.241		
p	0.350	0.000		

(Table 4).

The incidence of LDH is related to many factors, such as age, occupation, heredity, smoking, etc. In recent years, the incidence of LDH is on the rise due to the increasing pressure of life. Conservative treatment is the first choice for LDH treatment. Because of the differences in patient's educational level and understanding ability, the compliance of

rehabilitation training is poor during conservative treatment and the bad act habits and lifestyle have not been changed, which affects the treatment effect^[5]. Therefore, effective nursing intervention during conservative treatment of LDH has important clinical significance. King's interactive compliance theory includes social system, interpersonal system and personal system. It emphasizes effective communication between nurses and patients and

promotes mutual influence and correct perception, thus gradually completes nursing goals^[6]. Research shows that King's interactive compliance theory improves nurse-patient communication effect and promotes patients subjective initiative to improve nursing quality^[7].

In this study, the nursing intervention guided by King's interactive compliance theory was applied to LDH conservative treatment. The results showed that the disease cognition rate of the interactive nursing group was higher than that of the routine nursing group, indicating that nursing intervention guided by King's interactive compliance theory could improve the disease cognition rate of LDH patients. Nursing intervention guided by King's interactive compliance theory promoted communication between nurses and patients by implementing planned and purposeful intervention for patients in combination with action demonstration and videos, thus improving patients understanding of LDH symptoms, conservative treatment methods, curative effect and inducing factors. At the same time, the patient's family members were also taken as education objects, which improved patient's initiative and enthusiasm in learning together. In addition, family members, as family supporters of patients, were conducive to cultivating a good family atmosphere. Their participation was beneficial to formulating mutually recognized behavioral intervention plans for patients rehabilitation training, reducing family unfavorable factors and ensuring the maintenance of patients enthusiasm in treatment^[8,9]. Multi-interaction between nurses and patients, family members and patients, family members and nurses helped to consolidate and strengthen the interaction, increase the breadth and depth of communication, further enhance the understanding of patients and their families on diseases and treatment methods and eliminate difficulties in time. Communication between patients and their family member was helpful to strengthen patient's cognition of unfamiliar knowledge points, timely correct correct measures cognition and consolidate cognition^[10].

The results of this study showed that the incidence of bad acts in the interactive nursing group was lower than that in the routine nursing group and the range of flexion motion, lateral flexion motion and rotation motion of the interactive nursing group was higher than that of the routine nursing group,

indicating that nursing intervention guided by King's interactive compliance theory was helpful to reduce the bad acts of LDH patients and promote the recovery of lumbar function. In this study, patients were guided to carry out body position training and change bad living habits. The patients were also guided to protect lumbar vertebrae in labor and work. Avoidance of heavy objects lifting and family member's participation was emphasized^[11]. All these would help patients develop correct standing, sitting and behavior habits^[12]. WeChat and E-mail are daily communication tools for the public and their beneficial value in health education has been clinically confirmed^[13]. Fronczek research also shows that King's interactive compliance theory is helpful to improve the effect of distance education^[14]. This study provided an online communication platform for communication among patients and communication between nurses and patients by establishing WeChat group, thus shortening the distance between patients and nurses and helping nurses to play a coordinating role to ensure more effective clinical nursing. Relevant research shows that the scenario interactive intervention model created by King's interactive compliance theory can effectively promote the cognitive interaction between nurses and patients, promote the harmonious relationship between nurses and patients and help to improve patients' cognition level of theoretical knowledge^[15]. According to the results of this study, the VAS score of the study group was lower than that of the control group, indicating that nursing intervention guided by King's interactive compliance theory could obviously relieve the pain of patients. It may be because of the inflammatory reaction in the body has been improved by effective improvement of lumbar function^[16].

To sum up, nursing intervention guided by King's interactive compliance theory could improve disease cognition rate, reduce bad acts, improve lumbar function and relieve pain, with certain clinical promotion value.

Conflicts of interest:

The authors declared no conflict of interest.

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