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Analysis of the Effect of Safety Culture Construction in Nursing Management of Infectious Disease Area

Xing Wang, Jing Wang, Yu Wu, Yang Yu*

Affiliated Hospital of Hebei University, Baoding071000, Hebei, China

***Corresponding author:** Yang Yu, 534974222@qq.com

Abstract: *Objective:* To explore the effect of applying safety culture construction in nursing management of infectious disease areas. *Methods:* During the one-year period from January 2024 to December 2024, patients admitted to the infectious disease area of our hospital were randomly selected for the study. 92 patients were divided into two groups using a computerized double-blind method for intervention. The control group received routine nursing management, while the observation group applied safety culture construction management. The effects of nursing management in the two groups were studied and compared. *Results:* Before management, the nursing management quality scores of the two groups were evaluated, showing little difference in various scores, and the difference was not statistically significant ($P > 0.05$). Through the implementation of nursing management, the scores of the two groups were significantly improved, and the observation group had significantly higher scores compared to the control group ($P < 0.05$). Compared to the incidence of nursing risk events, the observation group (6.52%) was significantly lower than the control group (30.43%), and there was a significant difference between the two groups ($P < 0.05$). The observation group had significantly higher satisfaction scores for nursing skills, health education, service attitude, and professionalism compared to the control group, indicating patient satisfaction with safety culture construction ($P < 0.05$). *Conclusion:* Applying safety culture construction in nursing management of infectious disease areas has a preventive effect on nursing risk events and is beneficial for improving patients' risk cognition level.

Keywords: Safety culture construction; Infectious diseases; Ward nursing; Nursing management

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1. Introduction

With the continuous improvement of people's quality of life and changes in lifestyle habits, the incidence of many infectious diseases has increased. Infectious diseases can often spread through humans, animals, and other means, posing a significant threat to patients' health [1]. Due to the transmissive characteristics of infectious diseases,

patients are primarily treated in infectious disease areas to achieve effective treatment and isolation. However, risk events cannot be avoided, so it is essential to strengthen nursing management for patients and actively leverage the role and value of adjuvant therapy. Although routine nursing management can meet patients' treatment needs, the prognosis is often poor, increasing the risk of adverse events.

Safety culture construction, as a new management model, prioritizes safety as its primary philosophy. Under the management of nursing safety culture, a strong atmosphere of safety management is created, minimizing existing and potential risks. This further enhances the nursing staff's awareness of safety services and risk prevention abilities, thereby effectively preventing risk events for patients [2]. This study mainly selects 92 patients admitted to the infectious disease area of the hospital in recent years to research nursing management, aiming to explore the application effect of safety culture construction.

2. Materials and methods

2.1. General information

During the period from January 2024 to December 2024, around 92 patients were selected from those admitted to the infectious disease area of our hospital. The patients were grouped using a computerized double-blind method. The control group consisted of 46 patients, including 25 males and 21 females, aged between 18 and 80 years, with an average age of (45.97 ± 5.89) years. The duration of the disease ranged from 1 to 13 months, with an average of (6.72 ± 0.83) months. The types of infectious diseases included 14 cases of tuberculosis, 18 cases of hepatitis B, 10 cases of influenza, and 4 other types. The observation group consisted of 46 patients, including 24 males and 22 females, aged between 19 and 79 years, with an average age of (45.77 ± 5.82) years. The duration of the disease ranged from 2 to 12 months, with an average of (6.78 ± 0.82) months. The types of infectious diseases included 16 cases of tuberculosis, 17 cases of hepatitis B, 8 cases of influenza, and 5 other types. By analyzing and comparing baseline data such as age, gender, disease duration, and type of infection, there was no statistically significant difference between the two groups, making them comparable for research ($P > 0.05$).

Inclusion criteria: All selected patients met the relevant diagnostic criteria for infectious diseases, and patients voluntarily participated in the study.

Exclusion criteria: consciousness disorder, severe mental abnormality, comorbidities with malignant lesions, estimated survival time of less than 6 months, withdrawal from the study midway, incomplete data, etc.

2.2. Methods

The control group received routine nursing management: nursing staff provided patients with knowledge related to their diseases, patiently answered patients' questions, and performed basic tasks such as regular disinfection and cleaning of the ward environment.

The observation group applied safety culture construction based on the control group's management. The main contents were as follows:

(1) Establish a management team where members discussed nursing management plans based on patients' actual conditions, adhering to the patient-centered and safety-first philosophy, and strictly implementing nursing safety culture management norms in infectious disease areas [3, 4].

(2) Nursing staff educated visitors on infectious disease-related knowledge, disinfection, isolation, and proper handwashing techniques according to visitor management requirements. They also reinforced safety

awareness, ensured visitors understood protective measures, and instructed and monitored their behavior, such as wearing masks during visits [4].

(3) Nursing staff conducted health knowledge education using easy-to-understand language, along with graphics, videos, and promotional brochures, tailored to patients' educational levels. They created a positive cultural atmosphere in the infectious disease area, communicated with patients from their perspective, provided emotional support, emphasized the importance of maintaining a positive attitude for recovery, encouraged active cooperation with treatment, and monitored adverse drug reactions to promptly address any adverse events and minimize nursing risks [5].

(4) Regular training sessions were conducted to educate nursing staff on safety culture construction, ensuring strict compliance with disinfection and isolation protocols. The team leader oversaw all activities and addressed daily nursing issues during morning meetings to ensure smooth implementation of safety culture construction. Additionally, practical exercises were organized to enhance nursing staff's risk prevention and self-protection abilities, reduce occupational exposure risks, and provide vaccinations to all personnel in the infectious disease area during special epidemic periods [6, 7].

(5) Symptomatic intervention: nursing staff managed patients based on their specific conditions. For example, patients with special infectious diseases like AIDS or anthrax were isolated and visits were prohibited. For those with chronic infectious diseases like liver disease or tuberculosis, who often experienced psychological pressure due to their longer disease duration, nursing staff monitored their psychological state and mental symptoms, and provided timely nursing intervention to prevent risk events.

2.3. Observation indicators

2.3.1. Effectiveness of nursing management

Based on a self-made questionnaire from the hospital, four aspects including risk management attitude, safety hazard cognition, risk management behavior, and risk prevention ability were evaluated before and after one month of management [8]. Each item was scored from 0–25, with higher scores indicating better nursing management effectiveness.

2.3.2. Nursing risk events

Risk events such as nosocomial infections and falls were closely monitored and recorded. The sum of these events divided by the total number of patients expressed as a percentage, indicated the incidence rate.

2.3.3. Satisfaction with nursing management

Using a self-designed satisfaction evaluation form, patients evaluated the nursing management work based on four aspects: nursing skills, health education, service attitude, and professional level. Each item was scored out of 100, with higher scores indicating higher patient satisfaction.

2.4. Statistical analysis

Statistical software SPSS 23.0 was used to analyze the research data. The t-test was used to compare the measurement data between groups, and the scores were described in the form of (). The chi-square test was used to compare the count data between groups, and the incidence rate was described in the form of (n, %). Statistical significance was set at $P < 0.05$.

3. Results

3.1. Comparison of nursing management effectiveness between the two groups

Before the management, there was no significant difference in the scores of various nursing management aspects between the two groups, and there was no statistical significance ($P > 0.05$). After one month of nursing management, the scores of both groups improved. However, the observation group had significantly higher scores in all aspects compared to the control group ($P < 0.05$). See **Table 1** for detailed data.

Table 1. Comparison of nursing management effectiveness between the two groups [($\bar{x} \pm s$), scores]

Time	Group	Risk management attitude	Awareness of safety hazards	Risk management behavior	Risk prevention ability
Before management	Observation group ($n = 46$)	12.43 ± 3.48	14.08 ± 3.56	13.54 ± 3.38	12.76 ± 3.49
	Control group ($n = 46$)	12.39 ± 3.49	14.11 ± 3.53	13.48 ± 4.43	12.68 ± 3.44
	t-value	0.027	0.033	0.108	0.026
	p-value	＞ 0.05	＞ 0.05	＞ 0.05	＞ 0.05
After management	Observation group ($n = 46$)	22.32 ± 1.37	20.91 ± 3.52	19.45 ± 3.55	21.34 ± 2.58
	Control group ($n = 46$)	16.72 ± 2.29	17.37 ± 3.51	15.74 ± 3.43	17.42 ± 2.79
	t-value	12.681	20.058	15.509	13.331
	p-value	＜ 0.05	＜ 0.05	＜ 0.05	＜ 0.05

3.2. Comparison of nursing risk events between the two groups

The incidence of nursing risk events in the observation group was 4.34%, while that in the control group was 23.91%. The observation group had a significantly lower incidence compared to the control group ($P < 0.05$). The results are shown in **Table 2**.

Table 2. Comparison of the Incidence of Nursing Risk Events Between the Two Groups[n(%)]

Group	Hospital infection	Fall	Incidence
Observation group ($n = 46$)	1(2.17)	1(2.17)	2(4.34)
Control group ($n = 46$)	7(15.22)	4(8.69)	11(23.91)
x^2-value	-	-	7.441
p-value	-	-	< 0.05

3.3. Comparison of satisfaction with nursing management between the two groups

According to the survey, the satisfaction scores for various aspects of nursing management in the observation group were significantly higher compared to those in the control group, indicating that patients in the observation group were satisfied with the safety culture construction management ($P < 0.05$). The results are shown in **Table 3**.

Table 3. Comparison of Satisfaction Scores for Nursing Management Between the Two Groups [($\bar{x} \pm s$), scores]

Group	Nursing skills	Health education	Service attitude	Professional level
Observation group ($n = 46$)	92.87 ± 2.63	92.76 ± 2.99	91.33 ± 2.86	90.66 ± 3.03
Control group ($n = 46$)	80.02 ± 2.71	82.54 ± 2.68	82.51 ± 2.91	80.15 ± 2.97
t-value	10.205	18.011	12.308	11.553
p-value	< 0.05	< 0.05	< 0.05	< 0.05

4. Discussion

Due to the infectious nature of contagious diseases, patients are often arranged in infectious disease areas for treatment and isolation to minimize transmission and reduce the risk of infection. Currently, the conventional nursing management model adopted in the nursing management of infectious disease areas focuses on patient condition management. Although it can meet patients' treatment needs, it cannot avoid risk events, making the effectiveness of nursing management less than ideal [9].

Nowadays, safety culture construction is widely used in the nursing management of infectious disease areas. As a new management model, its philosophy lies in safety first, adhering to the patient-centered principle. It identifies and categorizes existing and potential nursing risks, deeply explores the reasons for risk occurrence and formulates nursing management plans based on this. Moreover, under the training of safety culture construction for nursing staff, their awareness and ability of risk prevention are gradually strengthened, to build a good atmosphere of safety nursing. This has a positive effect on avoiding various nursing risk events, thereby ensuring the safety of nursing management in infectious disease areas [10].

According to the research data in this article, before management, there was no significant difference in the scores of various nursing management aspects between the two groups ($P > 0.05$). However, after management, the observation group had significantly higher scores in risk management attitude, safety hazard cognition, risk management behavior, and risk prevention ability compared to the control group ($P < 0.05$). This result indicates that the implementation of safety culture construction can improve nursing staff's risk prevention awareness and self-protection ability by improving various work systems and conducting training activities, thereby effectively improving the quality and effectiveness of nursing management in infectious disease areas.

After one month of nursing management, the incidence of nosocomial infections and falls in the observation group was 4.34%, while that in the control group was 23.91%. It can be seen that the incidence of risk events in the observation group was lower than that in the control group ($P < 0.05$). This suggests that safety culture construction can systematically identify objective and potential nursing risks, allowing for targeted intervention, which is beneficial for reducing nursing risk events and the risk of nosocomial infections. Meanwhile, a survey of the two groups' satisfaction with nursing management showed that the observation group had significantly higher scores for nursing skills, health education, service attitude, and professional level compared to the control group ($P < 0.05$). The research data indicates that compared to conventional nursing management, safety culture construction provides patient care services from multiple aspects, such as health education for patients, introducing disease-related knowledge with appropriate communication skills, correcting patients' misconceptions, and providing psychological counseling to improve patient cooperation. Strict implementation of the visitation system, providing health knowledge, and enhancing safety awareness and self-care ability are deeply recognized by patients.

5. Conclusion

In summary, the application of safety culture construction in the nursing management of infectious disease areas achieves the best management effects. It plays a positive role in preventing risk events in infectious disease areas, effectively strengthening risk awareness and prevention capabilities, and has high promotion value.

Disclosure statement

The authors declare no conflict of interest.

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