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Original Article

Effects of roleplay simulation on improving quality management of nursing service

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Abstract: Objective: To observe the feasibility of roleplay simulation in improving the quality management of nursing services. Method: In this retrospective study, 80 nursing staff were enrolled as the study subjects from January 2019 to December 2020. They were divided into a study group (n=40, trained in roleplay simulation) and a control group (n=40, trained in conventional nursing skills) according to different training methods. The self-efficacy and quality of nursing services of the staff in the two groups were assessed retrospectively. Spearman's correlation analysis was conducted to analyze the relationship between the self-efficacy score and nursing service. Results: After training, the self-efficacy scores of the nursing staff in the study group were higher than those in the control group (P<0.05). After training, the nursing staff in the study group had significantly higher service quality scores than those in the control group (P<0.05). Spearman's analysis showed that the self-efficacy scores were positively correlated with the quality of nursing scores (r=0.7091, P<0.0001). After training, the scores of the condition assessment of the nursing staff in the study group was higher than those in the control group (P<0.05). Conclusion: Roleplay simulation for nursing staff is helpful to improve the quality of nursing and the ability to deal with emergencies. This can be related to the improvement of self-efficacy in nursing staffs.

Keywords: Roleplay simulation, nursing services, quality improvement, self-efficacy, feasibility analysis

Introduction

With the continuous development of the economy in China, residents' health awareness has enhanced. The hierarchical and diversified needs of nursing services have gradually emerged [1]. The traditional nursing model centered on "doctor's advice and tasks" was fragmented and lacked integrity and continuity. This was not conducive to communication between patients and nursing staff, reducing the quality of nursing that patients received [2, 3]. Passive nursing was found to be difficult to mobilize the motivation and creativity of nursing staff. This hinders the significant improvement in the quality of nursing [4].

The quality of nursing services is directly related to the medical quality and medical safety. The concept of quality of nursing services has been gradually implemented in domestic hospitals. How to ensure the quality of nursing services is challenging at this stage [4]. Simulation exercises helped to develop strategic and tactical skills, improving the psychological quality of the test subjects [5]. Roleplay simulation nursing is a new type of nursing measure that allows nursing staff to explore strategies solving problems of people, events, objects, attitudes, emotions, and value orientation. This occurs by simulating a scenario around a central issue and performing it through discussion. Roleplay simulation has a wide range of applications in medicine. It has been pointed out that the conventional nursing model advocates learning in practice and continuously refines nursing skills through experiencing real cases. The concept is correct, but there are shortcomings. One example is that nursing students are not able to par-

ticipate in all the core nursing work for critically-ill patients. This results in inadequate knowledge construction [6]. It has been found that simulation exercises can improve the tacit cooperation of personnel in the emergency department and shorten the treatment duration for patients with acute and critical illnesses [7]. Other studies have found that roleplay simulation can develop the clinical thinking of nursing staff and rapidly improve their service levels [8]. There are few studies worldwide on the impact of roleplay simulation for the quality management of nursing services. The purpose of this study was to investigate the feasibility of roleplay simulation in improving the quality management of nursing services. This lays a foundation for building a harmonious doctor-patient relationship.

Materials and methods

General data

In this retrospective study, 80 nursing staff in the Department of Thyroid, Breast, and Anorectal Surgery in the First People's Hospital of Wenling from January 2019 to December 2020 were enrolled as the study subjects. They were divided into a study group (n=40, who received roleplay simulation) and a control group (n=40, who conducted conventional nursing training) according to different training methods. This study was approved by the Ethics Committee of the First People's Hospital of Wenling (Approval No. NCT02115879).

Inclusion criteria: (1) staff that had obtained nursing qualifications; (2) staff with working time ≥1 year before study; (3) staff with working time ≥6 months during the study period; (4) staff with educational level of secondary school or above.

Exclusion criteria: (1) staff involved in medical malpractice; (2) staff with educational level below secondary school.

Training method

The nursing staff in the control group received conventional nursing training and daily quality management. The responsible unit regularly trained and assessed the nursing staff. The hospital held regular lectures to constantly expand the vision of the nursing staff to assist them in continual learning and progression. The nursing staff communicated with the patients in standardized language, timely answered their questions, provided health education to the patients according to their actual conditions, and strived to build a harmonious nurse-patient relationship.

Roleplay simulation was carried out in the nursing staff of the study group on the basis of the control group. The training they received was summarized as follows: (1) A simulation team was established in the department. It consisted of a head nurse and nursing staff. The head nurse was responsible for convening the team members for regular roleplay simulation training, organizing review studies, and convening team members for discussion and communication; (2) Team members searched for and summarized the knowledge of roleplay simulation and reported the summaries to the head nurse. According to the collected information, the head nurse would convene team members for roleplay simulation training regularly (no less than 2 times a month) according to the work schedule; (3) Simulation training. In simulation training, the training group consisted of 3-4 nurses, who alternated the role of the simulated patient (nursing staff played the role as the simulated patient with common diseases in the Department of Thyroid, Breast, and Anorectal Surgery, such as thyroid cancer, breast cancer, anal fissure, proctitis, and rectal prolapse) and nursing staff. The nursing staff provided routine care to simulated patients, including daily consultation, preoperative education, postoperative care, and pre-invasive operation care. The purpose was to allow the nursing staff the ability to understand the feelings of patients before being nursed, strengthen their empathy for patients through role exchange, and improve the quality of nursing.

The observation period for both groups of nursing staff was 3 months. Various types of assessments were conducted before and after training. Comparisons were made between the two groups.

Outcome measurement

(1) The self-efficacy was compared before and after training. The General Self-Efficacy Scale [9] (GSES), consisting of 10 items in the form of 4-point Likert scale with each item scored 1-4, was used to evaluate the self-efficacy of the nursing staff. For each item, the subjects answered "completely not true", "hardly true", "moderately true", or "exactly true", depending

Table 1. Disease assessment indices and scoring criteria

Indicators		Score
How well do you think the subjects assessed the patient's condition?	Very poor	0
	Poor	2
	Moderate	4
	Good	6
	Very good	10
Do you think the subjects were able to solve the problem in multiple ways after they found it?	Very poor	0
	Poor	2
	Moderate	4
	Good	6
	Very good	10
What do you think of the subject's level of care and ability to analyze problems?	Very poor	0
	Poor	2
	Moderate	4
	Good	6
	Very good	10
How well do you think the subjects mastered the basics?	Very poor	0
	Poor	2
	Medium	4
	Good	6
	Very good	10
How well do you think the subject mastered the technical skills of specialized nursing?	Very poor	0
	Poor	2
	Moderate	4
	Good	6
	Very good	10
Do you think the subject was able to communicate effectively, appropriately, and accurately with patients and colleagues?	Very poor	0
	Poor	2
	Moderate	4
	Good	6
	Very good	10
Do you think the subjects played the role of a caregiver well?	Very poor	0
	Difference	2
	Moderate	4
	Good	6
	Very good	10

on their actual situation, and scored 1-4 points correspondingly. Higher scores represented higher self-efficacy. (2) The quality of nursing service was assessed before and after training using the Servqual scale [10]. This consisted of 6 dimensions with a total of 23 items on a 5-point Likert scale. Each dimension score ~~is~~ was divided into patient expectation (E), service perception (P), and quality of nursing (P-E). The scale had a maximum score of 115, with the higher score representing higher quality of nursing. The purpose of this scale was to assess the practical significance of roleplay simulation in improving the quality of nursing. It provided a quantitative assessment of the effectiveness of roleplay simulation by comparison between the groups and a reference for subsequent studies. (3) The scores of the condition assessment were compared between the two groups of nursing staff before and after training, respectively. It included seven dimensions such as condition assessment, conscientiousness, and knowledge level. Each dimension was scored on a scale of 0-10, with a total of 70 scores. The higher scores represented stronger ability (**Table 1**).

Table 2. Comparison of baseline data (mean ± SD)/[n (%)]

General data		Study group (n=40)	Control group (n=40)	t/χ^2	*P*
Gender	Male	10 (25.00)	8 (20.00)	0.287	0.592
	Female	30 (75.00)	32 (80.00)		
Mean age (years)		26.29±2.11	26.34±1.98	0.109	0.913
Average working time (years)		5.19±1.39	4.98±1.31	0.695	0.489
Average BMI (kg/m^2)		22.08±2.10	22.03±1.98	0.113	0.91
Educational level	Bachelor's degree and above	5 (12.50)	7 (17.50)	0.334	0.716
	Junior college	29 (72.50)	28 (70.00)		
	Secondary school	6 (15.00)	5 (12.50)		

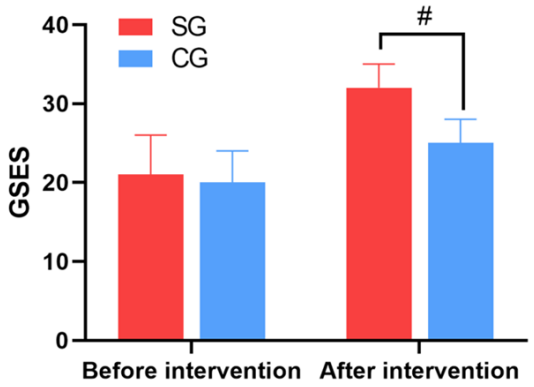

Figure 1. Comparison of self-efficacy between the two groups. #*P*<0.05 compared with the control group. GSES, General Self-Efficacy Scale.

Statistical methods

The data were entered into an Excel sheet and analyzed using the statistical SPSS 22.0 software. The collected data were tested for normal distribution. The count data were expressed as [n (%)] and examined using the chi-square test for comparison between the groups. The measured data were expressed as mean ± standard deviation (mean ± SD). The t-test was performed for inter-group comparisons. Paired-t test was used for intra-group comparison of before and after training. Correlation analysis was performed using Spearman's correlation. *P*<0.05 indicated a significant difference. Graphpad Prism 8.0 was used for figure plotting [11].

Results

Comparison of baseline data

There were no significant differences in gender, age, education level, or years of working experience between the two groups (all *P*>0.05) (**Table 2**).

Comparison of self-efficacy before and after training

The self-efficacy scores showed no significant difference between the two groups before training (*P*>0.05). After training, the nursing staff in the study group had higher self-efficacy scores than that in the control group (*P*<0.05) (**Figure 1**).

Comparison of nursing service quality

The nursing service quality scores of the nursing staff in the study group were significantly higher than those in the control group after training. The difference between the two groups was statistically significant (*P*<0.05) (**Table 3** and **Figure 2**).

Correlation analysis of self-efficacy and quality of nursing scores

Spearman's correlation analysis showed that self-efficacy scores were positively correlated with the quality of the nursing scores (*r*=0.7091, *P*<0.0001) (**Figure 3**).

Comparison of condition assessment ability of nursing staff

There were no significant differences in the condition assessment scores between the two groups before training (*P*<0.05). After training, the condition assessment scores of the nursing staff in the study group were higher than those in the control group (*P*<0.05) (**Table 4**; **Figure 4**).

Table 3. Evaluation of service quality of nursing staff (mean ± SD)

Indicators		Study group (n=40)	Control group (n=40)	*t*	*P*
Tangibility	Mean score	0.27±0.14	0.20±0.05	2.978	0.004
	1. The facilities including environment and conditions of the ward				
	2. Advanced equipment				
	3. Nurses were neatly dressed and dignified				
	4. Convenient living during hospitalization				
	5. Reasonable admission, discharge, and examination process for the convenience of patients				
Reliability	Mean score	0.31±0.24	0.19±0.05	3.096	0.003
	6. Completed all treatment and nursing procedure on time				
	7. The nurses helped patients solve problems in time				
	8. Accurate nursing records				
	9. Timely notification of disease conditions and health knowledge				
Responsiveness	Mean score	0.18±0.09	0.11±0.04	4.495	<0.001
	10. The nurse was on call				
	11. Nurses were eager to answer patients' questions				
	12. Active ward rounds and close observation of changes in condition				
Guarantee	Mean score	0.21±0.06	0.10±0.09	6.432	<0.001
	13. Nurses were skilled				
	14. Nurses were trustworthy				
	15. Nurses valued and respected rights of patients				
	16. Nurses ensured patient safety				
Empathy	Mean score	0.14±0.04	0.09±0.06	4.385	<0.001
	17. Patient-centered nursing				
	18. Nurses were enthusiastic, attentive, and considerate				
	19. Attention paid to the psychological care of patients				
	20. Needs of patients met as much as possible				
	21. Patient complaints handled correctly and improvements made				
Cost acceptability	Mean score	0.18±0.05	0.11±0.03	7.593	<0.001
	22. Reasonable charges				
	23. Patience in explaining all fees				
Total score		0.87±0.13	0.71±0.09	6.400	<0.001

Discussion

Nursing is an irreplaceable and important part of the healthcare system. Nursing quality is the core and is fundamental to ensure patient safety [12]. With the continuous progress of economy in China, patients are increasingly demanding high-quality medical services. Traditional passive nursing has been difficult to meet the needs of patients. New nursing quality management models are often sought to improve the overall quality of nursing [13, 14]. Some studies have found that the factors restricting the improvement of nursing quality are complex. The low motivation and creativity of the nursing staff is a critical factor [15]. With the deepening of industrialization, urbanization, and aging in China, there is a great demand in preventive health care, chronic disease management, elderly care, and rehabilitation, which provides a rare opportunity for the progress of nursing in China [16, 17].

In this study, the feasibility of roleplay simulation in improving the quality management of nursing services was investigated. The results showed that nursing staff with roleplay simulation training in the study group had significantly

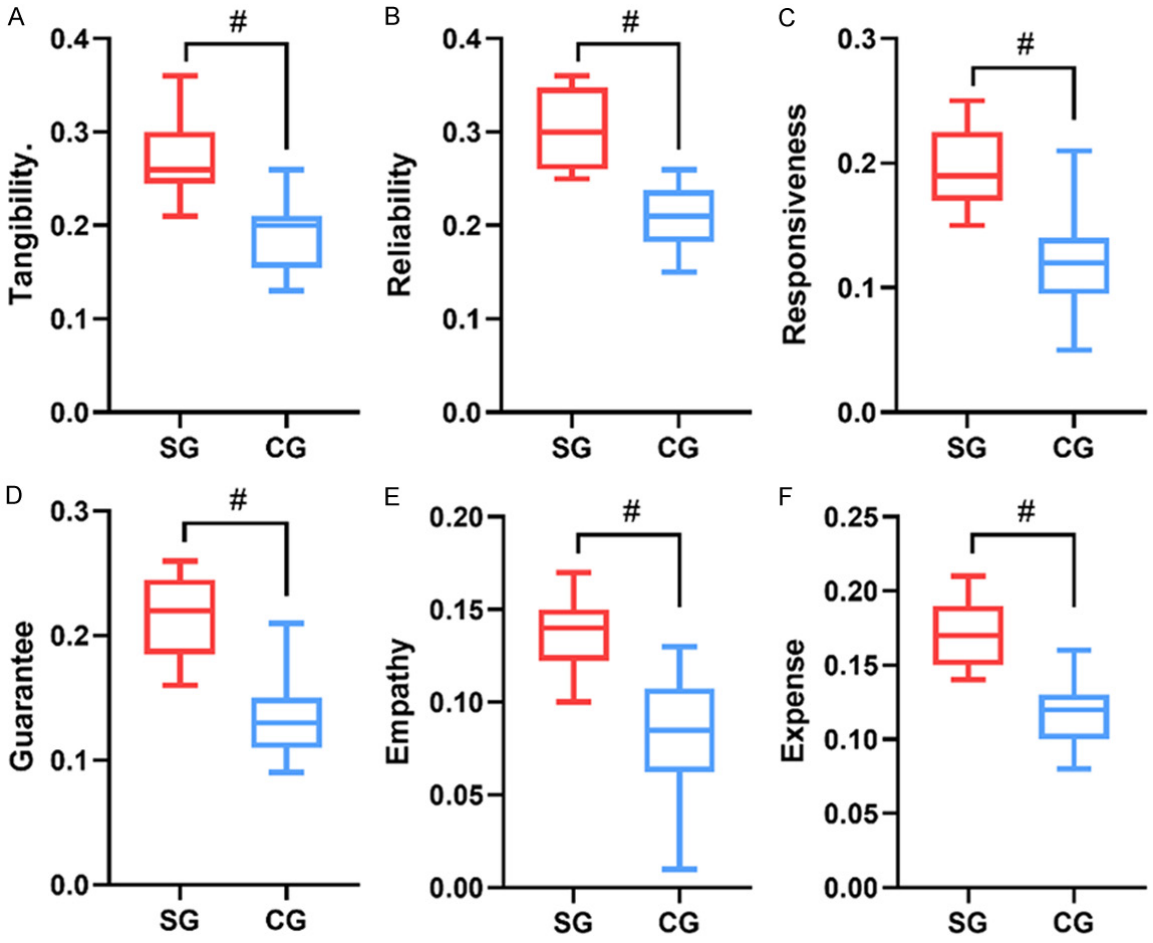

Figure 2. Service quality evaluation of nursing staff. (A) tangibility, (B) reliability, (C) responsiveness, (D) guarantee, (E) empathy, (F) expense. #$P<0.05$ compared with the control group.

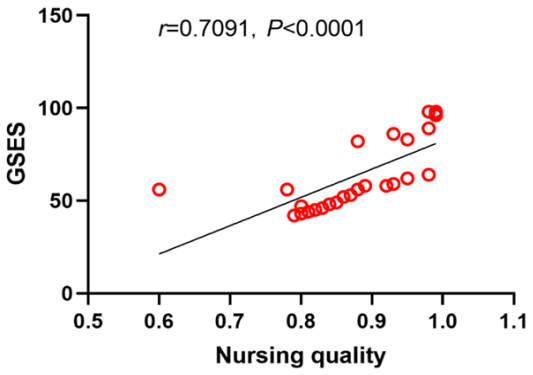

Figure 3. Correlation analysis between the scores of self-efficacy and quality of nursing of nursing staff. GSES, General Self-Efficacy Scale.

higher self-efficacy scores. Higher scores in the nursing quality assessment after training were compared with those who received conventional nursing management in the control group. According to a survey on 407 registered nurses in seven tertiary hospitals, the mean score of self-efficacy was (26.67±5.30). The factors affecting self-efficacy included department, nursing experience, and professional title. The results indicated that the self-efficacy of the nursing staff was at a low level. The factors affecting self-efficacy were complex. It was recommended that appropriate measures be adopted in nursing management to improve the self-efficacy of the nursing staff [18]. Another questionnaire survey on 928 nurses showed that the self-efficacy was at a moderate level, with a mean score of (2.68±0.56) and a job satisfaction score of (2.96±0.41). The self-efficacy score was positively correlated with job satisfaction. This study found that the self-efficacy of the nursing staff could be improved by increasing the job satisfaction [19]. The findings of the above studies were like the results

Table 4. Comparison of the scores of condition assessment (mean ± SD)

Indicators	Study group (n=40)		Control group (n=40)	
	Pre-training	Post-training	Pre-training	Post-training
Condition assessment	5.12±0.43	6.98±0.98	5.15±0.39	6.21±0.54#
Activity level	8.11±0.87	9.14±0.54	8.09±0.78	8.56±0.43#
Conscientiousness	7.71±0.43	8.43±0.43	7.80±0.39	9.54±0.54#
Knowledge mastery	6.11±0.77	8.45±0.54	6.09±0.67	7.18±0.43#
Operating skills	6.51±0.43	7.98±0.61	6.50±0.39	7.11±0.55#
Interpersonal communication	6.11±0.32	8.23±0.32	6.09±0.29	7.11±0.43#
Role performance	6.78±0.32	8.23±0.43	6.81±0.29	7.23±0.29#

Note: Compared with the study group, #P<0.05.

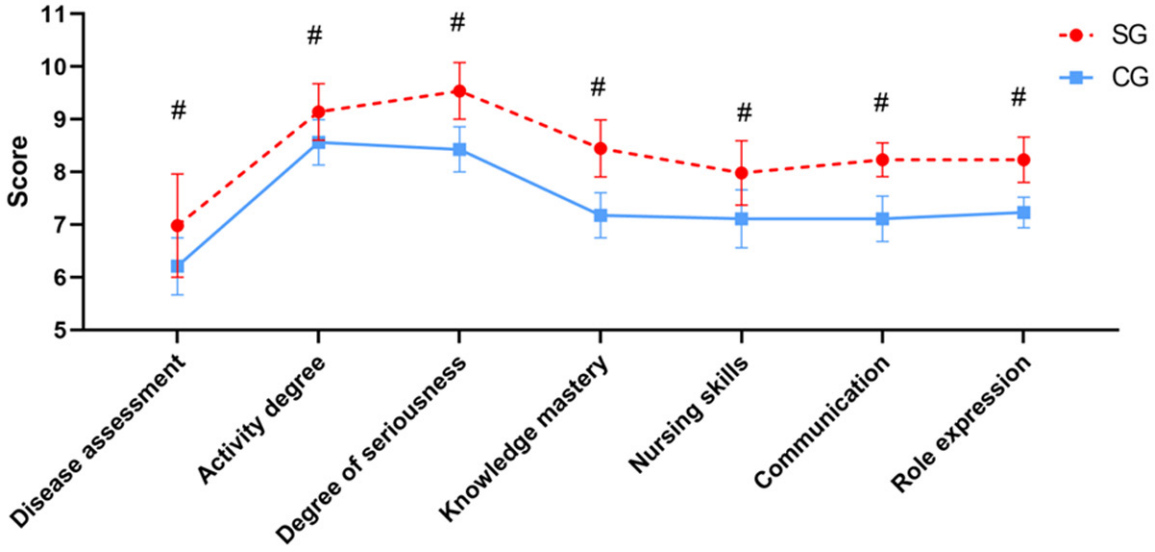

Figure 4. Comparison of condition assessment. #P<0.05 compared with the control group.

of this study. We believe that the nursing staff performed fragmented nursing work, such as wound disinfection, preoperative preparation, and dietary care. The lack of coherence between these tasks led to job boredom. The subjective initiative of nursing staff was not thoroughly developed. Passive nursing and lack of communication with patients created unpleasant nurse-patient relationships [20]. The role-based scenario simulation provided the nursing staff with the opportunity to experience the feelings of patients, enabling them to view nursing work from the perspective of patients. This increased their empathy for patients and stimulated their initiative, improving the self-efficacy and quality of nursing.

The results showed that the nursing staff in the study group scored higher than the control group in terms of condition assessment, conscientiousness, knowledge acquisition, and operational ability. This indicated that the role-play simulation was helpful to improve the skills of the nursing staff. A survey of the nursing staff showed that one of the main reasons for low nursing quality is that nursing work is routine work and lack of innovation, leading to low motivation of the nursing staff [21]. The application of roleplay simulation in this study provided new ideas for nursing work. Nursing staff can consider the key direction of nursing work from the perspective of patients. This will help to propose new initiatives, improving nursing skills. Nursing staff can review their daily work and synchronize their discussions to improve the nursing skills through mutual communication [22].

Roleplay simulation of the nursing staff is helpful to improve the quality of nursing and the

ability to deal with emergencies. Roleplay simulation can improve self-efficacy. The innovation of this study was the introduction of roleplay simulation as a new intervention model into the clinical setting. The feasibility and effectiveness of its application were demonstrated in detail, providing a reference for subsequent studies. The deficiency of this study lies in the small number of nursing staff enrolled and the fact that not all departments in the hospital were covered.

Disclosure of conflict of interest

None.

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