

# Observation of the Effect of Video Assessment Method on the Operation Skills of Individual Nurses

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**Abstract:** *Objective:* To explore the application effect of video assessment method in clinical nurses' nursing operation skills. *Method:* To select 58 nurses who participated in the individual soldier standard in the children's hospital in 2019 and 2020 as the research objects, among which the nurses who participated in the individual soldier standard in 2019 were the nurses who participated in the individual soldier standard in 2019 and 2020. A total of 29 people in the first batch were set as the control group, using traditional assessment methods. In 2020, the second batch of 29 nurses who participated in the individual soldier standard reached the experimental group. Using the video assessment method, there was no significant difference in general information between the two groups ( $P > 0.05$ ). After the assessment, the scores, coping with work pressure, and proactiveness of the two groups of research subjects were compared. *Results:* The experimental group's nursing operation assessment scores, coping with work pressure, and proactiveness were significantly better than those of the control group, the difference was statistically significant ( $P < 0.05$ ). *Conclusion:* The application of the video assessment method improves the passing rate of nurses' operational skills examination, enhances nurses' initiative in learning, reduces examination pressure, and can be accurately, timely, and safely applied to clinical nursing work, which is worthy of study and promotion.

**Keywords:** Video assessment method; Nurse; Operation skills; Effect observation

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## 1. Introduction

The operation skills of individual nurses that meet the standards refer to nurses who meet the requirements of the Shaanxi Provincial People's Hospital. Between 2019 and 2020, these nurses participated in 26 nursing skill operations. After passing the assessment (with each score  $\geq 90$  points), the nursing department of Shaanxi Provincial People's Hospital awarded the qualified nurses with a certification of individual nurse standards. Nursing science is a highly practical applied discipline <sup>[1]</sup>. To become a qualified nurse, one needs to possess solid theoretical knowledge and proficient nursing skills. The principles include measurability, scientific nature, advancement, practicality, seriousness, and relative stability. Standardized nursing techniques not only improve

the quality of care but also meet patient needs, regulate nurse behavior, strengthen the training of nursing talents, promote the development of nursing disciplines, and enhance hospital management. They also ensure patient safety, promote harmonious nurse-patient relationships, and further improve nursing quality on the basis of ensuring nursing quality and safety [2].

Pediatrics is a comprehensive medical science that studies the promotion of children’s growth and development, physical and mental health, and disease prevention and treatment [3]. Its task is to continuously explore pediatric medical theories and, based on practice, reduce morbidity and mortality, enhance the physical condition of children and adolescents, and improve the level of child and adolescent healthcare and disease prevention. Pediatrics is a special and key department. Diagnosing and treating children’s diseases is generally more difficult than adult diseases. This is mainly because children, especially infants, are not good at expressing subjective symptoms and cooperating with physical examinations. It is also closely related to the many characteristics of children. The principles and characteristics of pediatric treatment are early treatment and thorough treatment: early detection of the condition, early diagnosis, thorough cure, and prevention of recurrence and deterioration, which is especially important for chronic and malignant diseases such as epilepsy. Medical care and nursing are inseparable, and pediatric nursing is particularly important. Hence, there is the saying “Three parts medical treatment, seven parts nursing.” Good nursing work not only accelerates the improvement of the condition but also allows the child to recover their physical and mental health as soon as possible. Pediatric nursing works not only face child patients but also with their parents. Only by mastering proficient and standard nursing skills can the pain of the child patients be alleviated, and parents feel assured and satisfied, thereby increasing satisfaction with the nurses and the department. Traditional assessment methods emphasize the demonstration and assessment process by teachers, ignoring the learning effect [4], resulting in a low pass rate in exams. This article aims to study the comparative effect of video assessment methods and traditional assessment methods.

## 2. Materials and methods

### 2.1. General information

A total of 58 nurses from the Department of Pediatrics of Shaanxi Provincial People’s Hospital participated in the individual nurse standards assessment in 2019 and 2020. The 29 nurses who participated in 2019 were designated as the control group, using the traditional assessment method, while the 29 nurses who participated in 2020 were designated as the experimental group, using the video assessment method. There were no significant differences between the two groups in terms of age, education, professional title, and level ( $P > 0.05$ ). See **Table 1**.

**Table 1.** Comparison of general information between the two groups of nurses

| Subgroups                              | Age          | Academic qualifications<br>(Undergraduate/Specialized) | Title<br>(Nurse practitioner/Nurse) | Tier<br>(N2/N1) |
|--|--------------|--|-------------------------------------|-----------------|
| Experimental group<br>( <i>n</i> = 29) | 29.15 ± 0.07 | 17/12  | 12/17                               | 12/17           |
| Control group<br>( <i>n</i> = 29)      | 28.79 ± 0.07 | 16/13  | 13/16                               | 13/16           |
| <i>t</i> -value                        |              |  | -3.60                               |                 |
| <i>P</i> -value                        |              |  | 0.053                               |                 |

## 2.2. Inclusion and exclusion criteria

Inclusion criteria:

- (1) Nurses employed at Shaanxi Provincial People's Hospital;
- (2) Possessing a nursing qualification certificate;
- (3) Nurses who joined the hospital after the year 2000;
- (4) Nurses younger than 45 years old.

Exclusion criteria:

- (1) Trainees and nursing assistants at Shaanxi Provincial People's Hospital;
- (2) Nurses who joined the hospital before the year 2000;
- (3) Nurses older than or equal to 45 years old.

## 2.3. Methods

The control group used the conventional assessment method, which includes department training and on-site assessment. The experimental group used the video assessment method, which includes department training and video assessment.

### 2.3.1. Departmental training

- (1) Training materials: The sixth edition of "Fundamentals of Nursing" published by People's Medical Publishing House <sup>[6]</sup> was used as the training material. The "Guidelines for Common Nursing Technical Operations" <sup>[7]</sup> published by Fu Jufang from the Fourth Military Medical University was used as supplementary training material. This guide is comprehensive, introduces best practices in each operation process, embodies the "people-oriented" concept, and is described in simple and understandable language, providing strong guidance and operability. It is suitable for clinical nursing staff at all levels and nursing-related students as a reference.
- (2) Training methods: The training supervisor of each department formulated the training plan for individual nurse standards based on the assessment content issued by the nursing department and adjusted the training progress timely according to the department and nurse's conditions. The skill operation assessment was carried out in each department according to the training plan. Nurses in the control group participated in skill teaching and training twice a week, with one operation per session, i.e., one class hour, totaling 2 class hours. A total of 26 operations were included, amounting to 26 class hours. Nurses who participated in the individual standards assessment practiced freely, and the nursing department notified the assessment time. Nurses in the experimental group participated in skill teaching and training twice a week, with one operation per session, i.e., one class hour, totaling 2 class hours. A total of 26 operations were included, amounting to 26 class hours. Nurses practiced the skills in groups of three, repeatedly practiced, recorded videos, and promptly corrected any issues found. After each class hour, nurses participating in the individual standards assessment filled in the "Shaanxi Provincial People's Hospital Individual Nurse Standards Training Manual," and the head nurse and skill group leader conducted a comprehensive evaluation of their training implementation.

### 2.3.2. Assessment methods

The assessment standards were based on 28 clinical nursing operation standards formulated by the nursing department of Shaanxi Provincial People's Hospital. Each operation should include material preparation, pre-operation assessment, operation procedure, material disposal, and operation precautions <sup>[8]</sup>. The control group

used the traditional one-on-one assessment method, with the operation time controlled within 10 minutes. After the operation, the examiner gave a score, and the nursing department integrated and provided feedback on the scores. The experimental group recorded videos in groups of three, with one acting as the patient, and the operation time was controlled within 8 minutes. After recording the video and uploading it to the hospital's intranet, the head nurse of the department scored the video. If the video was qualified, it was submitted to the nursing department for assessment. Otherwise, the candidate re-recorded and uploaded the video. The nursing department integrated and provided feedback on the scores. Following the principle of "everyone passes," scores of  $\geq 90$  points were considered as passing, and a certificate of individual nurse standards was issued by the hospital.

## 2.4. Evaluation indicators

The evaluation indicators included assessment scores (randomly selecting two operations for comparison), assessment pass rate, skill mastery level, learning enthusiasm, exam-related psychological pressure, clinical effect evaluation, and assessment efficiency.

## 2.5. Statistical analysis

SPSS 21.0 statistical software was used to analyze the relevant data. Measurement data were expressed as mean  $\pm$  standard deviation (SD) and compared between groups using the *t*-test. Count data were expressed as frequency and percentage (%), and the  $\chi^2$  test was used for group comparisons. Differences were considered statistically significant if  $P < 0.05$ .

## 3. Results

### 3.1. Comparison of nursing operation scores between the experimental group and the control group

Two nursing operation scores were randomly selected for comparison between the experimental group and the control group, as shown in **Table 2**.

**Table 2.** Comparison of two random nursing operation scores between the experimental group and the control group

| Subgroups                       | Assessment result             |                  |
|---------------------------------|-------------------------------|------------------|
|                                 | Cardiopulmonary resuscitation | Nasal feeding    |
| Experimental group ( $n = 29$ ) | 94.95 $\pm$ 1.31              | 95.90 $\pm$ 1.50 |
| Control group ( $n = 29$ )      | 90.37 $\pm$ 1.84              | 90.57 $\pm$ 2.31 |
| <i>t</i> -value                 | -104.87                       | -100.61          |
| <i>P</i> -value                 | 0.00                          | 0.00             |

As shown in **Table 2**, both scores in the experimental group were higher than those in the control group, with statistically significant differences ( $P < 0.05$ ). This indicates that the video assessment method is superior to the traditional method in terms of pass rates.

### 3.2. Nurses' evaluation of the effectiveness of the two assessment methods

As shown in **Table 3**, the effectiveness evaluations of the two assessment methods by nurses were compared



using the rank-sum test. A  $P$ -value of  $< 0.05$  was considered statistically significant. The differences in skill mastery level ( $Z = -2.561, P = 0.010$ ) and assessment efficiency ( $Z = -2.275, P = 0.023$ ) were statistically significant. This suggests that the video assessment method is more effective than the traditional assessment method.

**Table 3.** Nurses' evaluation of the effectiveness of the two assessment methods

| Indicators                 | Experimental group |         |    | Control group |         |    | $Z$    | $P$   |
|----------------------------|--------------------|---------|----|---------------|---------|----|--------|-------|
|                            | Obvious            | Average | No | Obvious       | Average | No |        |       |
| Level of skill acquisition | 29                 | 0       | 0  | 23            | 3       | 3  | -2.561 | 0.010 |
| Motivation                 | 26                 | 3       | 0  | 21            | 6       | 2  | -1.723 | 0.085 |
| Psychological stress       | 24                 | 4       | 1  | 24            | 5       | 0  | -0.059 | 0.953 |
| Effectiveness evaluation   | 24                 | 5       | 0  | 20            | 9       | 0  | -1.217 | 0.224 |
| Effectiveness              | 28                 | 1       | 0  | 22            | 6       | 1  | -2.275 | 0.023 |

### 3.3. Pass rates of the two assessment methods

Comparing the pass rates of the two groups, the pass rate of the control group was  $\geq 86\%$ , while the pass rate of the experimental group was 100%, with all participants passing.

## 4. Discussion

To improve the effectiveness of skill assessments for clinical nurses, many hospital administrators are actively exploring the use of video teaching methods, which are becoming increasingly common in clinical education<sup>[9,10]</sup>. The single-soldier qualification method devised by Shaanxi Provincial People's Hospital's nursing department incorporates video teaching methods, transforming in-person assessments into online video assessments. This approach standardizes and normalizes the training and assessment of nurses' operational skills. During training and assessments, emphasis is placed on pre-operation evaluations, the implementation of check systems, and the alignment of training and assessment content with clinical practice operations, achieving the goal of assessments being closely aligned with clinical practices. This method helps cultivate and enhance nurses' practical skills, ensuring nursing safety during treatment processes, and promoting the rationalization of basic nursing care<sup>[11]</sup>.

### 4.1. Video assessment method enhances learning motivation

The video assessment method primarily uses video materials and is designed based on the teaching objectives and characteristics of the learners. It comprehensively evaluates various abilities of the examinees, such as analysis, evaluation, and expression. As shown in **Table 3**, the application of the video assessment method significantly improved the learning motivation of the examinees compared to the control group. This method not only allows examinees to integrate and apply the knowledge they have learned actively, enhancing their enthusiasm and initiative for learning but also stimulates their interest in learning, reducing exam fatigue and fear. It helps build the nurses' confidence. During the repeated video recording process, to avoid making the same mistakes in subsequent recordings, examinees actively and purposefully identify the reasons for their errors, ultimately achieving standardized assessments. This ensures that correct operations are applied in clinical nursing work, providing patients with accurate, timely, and safe treatments, ensuring nursing safety, and improving patient satisfaction.

## 4.2. Video assessment method reduces exam stress for nurses

Traditional assessment methods typically involve a hierarchical examination system where senior nurses assess junior nurses. This system creates a tense exam atmosphere where examinees face the examiners directly, leading to high psychological pressure and underperformance, resulting in lower scores and pass rates. This necessitates retakes and fails to reflect the true learning outcomes of the examinees, not achieving the final learning objectives. The results of this study show that the video assessment method was superior to the traditional method in terms of exam stress management, indicating that the video assessment method effectively reduces examinees' stress. Additionally, it eliminates examiner biases and ensures objective and accurate assessment results.

## 4.3. Video assessment method standardizes clinical nursing operations

The video assessment method requires nurses to master every step of the operational skills, from preparing the materials to disposing of them afterward, prompting nurses to adhere to standardized operational procedures. In this study, the clinical performance evaluation of the experimental group was significantly higher than that of the control group, indicating that the video assessment method promotes standardized operational procedures, ensuring that each nurse can master and apply these standards accurately, safely, and promptly in clinical nursing operations. Moreover, the video assessment method can further enhance nurses' confidence in clinical operations<sup>[12]</sup>, laying a solid foundation for clinical nursing work. Improving nursing operation skills directly impacts the efficiency and quality of nursing work. Scientific and reasonable resource allocation is crucial for ensuring nursing quality and improving patient care outcomes.

## 5. Conclusion

In conclusion, nursing work is detailed and intricate, and the relationship between nurses and patients is akin to that between fish and water. Nurses must further improve their service attitudes, standardize their service behaviors, and enhance service quality on the foundation of prioritizing patients and providing enthusiastic service. This requires nurses to continuously improve their nursing skills to provide sincere, loving, patient, and careful service, taking the health of the people as their mission, and enhancing their sense of responsibility and mission to contribute more significantly to the development of socialist healthcare.

In the modern society of rapid multimedia development, administrators will recognize the shortcomings of traditional assessment methods. The traditional assessment methods will gradually be replaced by video assessment methods, transforming exams from passive to active experiences. This change alleviates exam anxiety, enhances learning motivation, significantly reduces the waste of manpower, material resources, and time, achieves teaching objectives, improves teaching effectiveness, and strengthens nurses' job competency, enabling them to adapt quickly to clinical nursing work. However, the limitation of this study is the small sample size of the study subjects in both groups, suggesting the need for larger samples and broader research.

## Disclosure statement

The authors declare no conflict of interest.

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