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Effect of PDCA on Nursing Management

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Abstract: *Objective:* To explore and analyze the effect of the plan-do-check-act (PDCA) cycle method in the nursing management of head nurses. *Methods:* 68 patients who were hospitalized in the general surgery department were used as research subjects. The patients were divided into an experimental group and a reference group, with 34 cases in each group, by drawing lots. The experimental group was managed with the PDCA method. The management satisfaction, nursing quality score, and nursing effect of both groups were compared with each other. *Results:* The patients in the experimental group were generally more satisfied with the nursing services compared to the reference group ($P < 0.05$), and the difference was statistically significant. Before the intervention, there was no statistically significant difference ($P > 0.05$) in the nursing quality scores such as ward safety management, nursing risk management, nursing document writing, rescue equipment management, and head nurse administrative management between the two groups. After the intervention, the experimental group had higher nursing quality scores. Furthermore, the nursing effects such as disease education, quality control, safety management, humanistic care, and service attitude in the experimental group were significantly better than those in the reference group ($P < 0.05$). *Conclusion:* The application of the PDCA method in nursing management can improve management satisfaction, nursing quality, and nursing effect.

Keywords: PDCA cycle method; Head nurse; Nursing management

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1. Introduction

In recent years, hospitals have strengthened the supervision and management of nursing work, and the quality of nursing care has become the top priority of many hospitals [1]. As most of the treatment work is done through nursing, the quality of nursing directly affects the quality of the hospital. Nursing also plays a key role in the patients' outcomes and physical health, and poor nursing will result in low satisfaction among the patients [2]. The head nurse is the leader of the nursing staff, so the management style of the head nurse is essential. An effective management style can improve the quality of care [3]. The plan-do-check-act (PDCA) is a management method used in enterprises. Recently, it has been gradually used in clinical nursing management and achieved great results [4]. Therefore, the effect of the PDCA method on nursing management was analyzed in this study.

2. General information and methods

2.1. General information

68 patients who were hospitalized in the general surgery department were used as research subjects. The patients were divided into an experimental group and a reference group, with 34 cases in each group, by drawing lots. The experimental group consisted of 15 males and 19 females, aged 16–90 years old, with an average of 53.27 ± 2.37 years old. The research group consisted of 16 males and 18 females, aged 15–90 years old, with an average of 53.34 ± 2.47 years old. There was no statistically significant difference ($P > 0.05$) in the general information such as gender and age between the groups.

Inclusion criteria: (1) signed an informed consent, (2) able to communicate normally, (3) articulate.

Exclusion criteria: (1) uncooperative patients, (2) presence of psychological issues.

2.2. Methods

The nurses for the reference group underwent routine management.

The nurses for the experimental group were managed with the PDCA method. (1) Plan: The head nurse, acting as a supervisor, organized departmental meetings to identify nursing issues, which included low work enthusiasm, lack of initiative, insufficient safety awareness, improper handling of emergencies, and non-standardized nursing documents. A management plan was developed to address these problems. (2)

Implementation: A study plan was formulated with a focus on enhancing the skill levels of junior nursing staff, enabling them to master department-specific nursing procedures. It also aimed to reinforce the professional capabilities of senior nursing staff. The learning progress was assessed regularly. Safety issues in the department were thoroughly investigated, including an analysis of the underlying causes, and corrective measures were devised. Regular safety warning education sessions were conducted for nursing staff, encouraging them to report any nursing adverse events. The department also encouraged open discussions, analysis, and rectification of such events. The temperature sheet, nursing record sheet, admission assessment sheet, etc., of admitted patients, were strictly filled in according to the specifications. In nursing care, the patient was at the center, and every essential nursing task was executed with excellence. Nursing levels were chosen based on the patient's condition and self-care level. Supervision and inspection results were discussed, analyzed, and rectified during regular monthly meetings, leading to continuous improvements. (3) Inspection: The head nurse examined the department's management in accordance with the hospital's nursing quality standards, summarized the management status, organized regular meetings, analyzed nursing quality issues with the nursing staff, and suggested corrective measures. (4) Nursing services were continuously enhanced through corrective measures, with a focus on improving nursing management standards and overall quality. New quality issues identified during the implementation of these measures were addressed and integrated into the new PDCA cycle for ongoing improvement.

2.3. Observation indicators

(1) A self-designed satisfaction scale was used to evaluate the patients' satisfaction with the nursing management, which included options like "very satisfied," "somewhat satisfied," "average," "dissatisfied," and no contact.

(2) Nursing quality scores were compared between groups, including ward safety management, nursing risk management, nursing document writing, first-aid equipment management, and head nurse administrative management on a scale of 0–100.

(3) The nursing effects of the two groups were compared, including health education, quality control, safety management, humanistic care, and service attitude, with 0–10 points for each item.

2.4. Statistical analysis

We used SPSS 21.0 for data processing and analysis. Count data were presented as the number of cases (n) and percentages (%), and the χ^2 test was applied. Measurement data were expressed as mean ± standard deviation, and the t-test was conducted. A significance level of $P < 0.05$ was considered statistically significant.

3. Results

3.1. Management satisfaction

The management satisfaction of the experimental group was significantly higher than that of the reference group ($P < 0.05$), as shown in **Table 1**.

Table 1. The comparison of management satisfaction between the two groups (n [%])

Group	Number of cases	Very satisfied	Somewhat satisfied	Average	Dissatisfied	No contact	Total satisfaction rate
Experimental group	34	15 (44.12)	12 (35.29)	3 (8.82)	1 (2.94)	3 (8.82)	33 (97.06)
Reference group	34	11 (32.35)	9 (26.47)	6 (17.65)	5 (14.71)	3 (8.82)	26 (76.47)
χ^2	-	-	-	-	-	-	6.2750
P	-	-	-	-	-	-	0.0122

3.2. Nursing quality score

Before the intervention, there was no statistically significant difference ($P > 0.05$) in the nursing quality scores such as ward safety management, nursing risk management, nursing document writing, rescue equipment management, and head nurse administrative management between the two groups. After the intervention, the experimental group had significantly higher nursing quality scores ($P < 0.05$), as shown in **Table 2**.

Table 2. The comparison of nursing quality scores between both groups (mean ± standard deviation)

Group	Number of cases	Ward safety management		Nursing risk management		Nursing document writing		Rescue equipment management		Nurse manager administration	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Cycle group	34	81.57 ± 2.61	86.24 ± 2.51	75.29 ± 4.36	94.21 ± 3.66	75.28 ± 3.61	94.22 ± 3.51	76.24 ± 3.52	93.21 ± 3.52	81.24 ± 3.62	91.27 ± 3.55
Reference group	34	81.34 ± 2.69	91.37 ± 2.66	75.36 ± 4.51	87.21 ± 4.36	75.69 ± 3.43	87.21 ± 3.52	76.55 ± 3.21	87.21 ± 3.59	81.43 ± 3.29	85.21 ± 3.52
t	–	0.3578	8.1789	0.0650	7.1701	0.4800	8.2227	0.3794	6.9584	0.2264	7.0681
P	–	0.7216	0.0000	0.9483	0.0000	0.6327	0.0000	0.7056	0.0000	0.8215	0.0000

3.3. Nursing effects

The nursing effects such as disease education, quality control, safety management, humanistic care, and service attitude in the experimental group were significantly better than those in the reference group ($P < 0.05$), as shown in **Table 3**.

Table 3. The comparison of nursing effects between the two groups (mean ± standard deviation)

Group	Number of cases	Disease education	QC	Safety management	Humanistic care	Service attitude
Experimental group	34	8.14 ± 1.25	8.65 ± 1.52	9.12 ± 0.52	8.21 ± 1.05	7.85 ± 1.25
Reference group	34	6.31 ± 1.05	6.21 ± 1.22	7.22 ± 1.65	6.24 ± 1.22	5.33 ± 1.65
t	-	6.5364	7.2997	6.4039	7.1364	8.0984
P	-	0.0000	0.0000	0.0000	0.0000	0.0000

4. Discussion

Changes in society and healthcare have created new expectations for clinical nursing. [5,6]. Nursing quality is a pivotal aspect of clinical nursing. Nursing encompasses a major part of clinical treatment. At the medical level, the quality of nursing has a substantial impact on the patient's recovery [7]. In recent years, there has been a growing emphasis on service attitudes, and a positive nurse-patient relationship is now regarded as an integral component of healthcare quality. Thus, enhancing the quality of care is of utmost importance [8,9]. The head nurse is responsible for managing the nursing staff, and the way of management directly determines the quality of nursing. The PDCA method is a popular management model in hospitals, which can effectively improve the quality and efficiency of nursing care [10,11]. The PDCA method comprises four distinct stages. The initial stage is planning, involving an assessment of the current nursing situation, problem identification, targeted analysis, and the formulation of corrective measures [12]. The subsequent stage is implementation, where tasks are executed rigorously, and each task is accurately completed, often accompanied by punitive measures. The third stage is inspection, which entails evaluating nursing activities according to established standards to assess the degree of implementation [13,14]. The fourth stage is processing, where, after completing the preceding three steps, the work's progress is reviewed, and any emerging issues are incorporated into a new cycle [15].

The PDCA cycle method involves the active participation of nursing staff in the management process, allowing for the development of work plans based on their feedback, which, in turn, can boost their motivation. By prioritizing patients at the center of nursing care, we can promptly address any quality issues that may arise, comprehensively enhance the quality of nursing care, improve nurse-patient relationships, and reduce the occurrence of risk events.

5. Conclusion

In conclusion, the head nurse's implementation of PDCA management in nursing has led to some noticeable improvements in corresponding management indicators. This management model deserves broad application and promotion.

Disclosure statement

The author declares conflicts of interest.

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