

## Exploring the Influences of Continuous Self-Management Education on the Self-Care Skills and Health Behavior of Patients with PICC Intubation

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**Abstract: Objective:** To analyze the effects of continuous self-management education on the self-care ability and health behavior of patients with tumor through peripherally inserted central venous catheters (PICC). **Methods:** The period from August 2018 to August 2020 was used as the research time range, and the random number table method was used as the basis for grouping. 80 patients with malignant tumors who regularly performed fixed catheter maintenance care in the PICC clinic of our hospital were admitted in the experimental group (given PICC specialist nursing, and implemented continuous self-management education), and 80 patients with PICC tube malignant tumors discharged from the superior hospital during this time range served as the control group (return to the original catheterization hospital from time to time or perform catheter maintenance care in the nursing clinic of our hospital). The self-care ability scores, health behavior scores, and complications during intubation between both groups were analyzed. **Results:** (1) There was no significant difference in self-care ability score and healthy behavior score between groups before the intervention,  $P>0.05$ ; the self-care ability score and health behavior score of the research group were better than the control group after intervention,  $P<0.05$ ; (2) After investigation, the incidence of complications in the research group (2.50%) was lower than that of the control group (10.00%), but there was no difference between the groups,  $P>0.05$ . **Conclusion:** Continuous self-management education has good effects on improving the self-care ability

of tumor patients with PICC intubation. It can urge patients to maintain good health behaviors and reduce complications. It is worthy of promotion.

**Keywords:** Continuous self-management education; PICC catheterization; Tumor; Self-care ability; Health behavior

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PICC catheter placement is a common clinical infusion support technology. Compared with traditional intravenous infusion technology, it has the advantage of longer catheter indwelling time. It is suitable for cancer patients on chemotherapy, hypertonic drugs, chronic diseases on long-term infusion, and long-term intravenous nutritional support. However, due to the need to take the tube home, if it is not properly maintained, patients are prone to complications such as infection and bleeding from the puncture site. Therefore, to ensure safe and long-term use of PICC catheters, it is necessary to strengthen patient self-management after catheter placement. Some scholars pointed out that the continuity of care model can extend the nursing service from hospitalization to discharge, which helps to improve the self-management ability of patients. Based on this, this article analyzes the impact of continuous self-management education on PICC intubed tumor patients on their self-care ability and health behavior.

# 1 Information and Methods

## 1.1 General Information

Taking the period from August 2018 to August 2020 as the research time range and using the random number table method as the basis for grouping, 160 cases of PICC intubed tumor patients received in our hospital during this time range were selected and divided into the control group (included 80 cases) and the experimental group (80 cases included). Control group: 35 cases/45 cases of male/female, 40-76 years old, average age (58.5±11.3) years, education level: 14 cases of elementary school and below, 37 cases of junior high school, 25 cases of high school or technical secondary school, university and above 4 cases; experimental group: male/female: 43 cases/37 cases, age 39-75 years, average age (57.4±10.6) years, education level: 15 cases of elementary school and below, 49 cases of junior high school, 11 cases of high school or technical secondary school, 5 cases of university and above. Inclusion criteria: Able to take care of themselves, normal communication skills, and clear consciousness; Living in an urban area, convenient for telephone follow-up; PICC placement for the first time; Be aware of the research content and signed an informed consent form at the same time. Exclusion criteria: those who cannot cooperate with the follow-up; those with obvious mental disorders; those with peripheral nervous system disorders; those with catheterization time less than 1 month; those with a history of central nervous system disorders. There is no difference in basic data (educational level, gender, etc.) between groups,  $P>0.05$ , which can be compared for study.

## 1.2 Methods

Control group (provided with conventional care): that is, returning to the original catheterization hospital from time to time or performing catheter maintenance care in the nursing clinic of our hospital.

Experimental group (provided with continuous self-management education): (1) Forming an education team: a safety management team comprised of nurses, head nurses, nursing backbones, and PICC full-time nurses, etc., responsible for implementing continuous self-management education, including formulating management plans and results evaluation, analysis of problems, and follow-up, etc.; (2) In-hospital phase: formulate a clinical routing table

for education, guide patients to join the medical WeChat group, and regularly push courses in a targeted manner so that patients can learn self-care skills; (3) Out-of-hospital phase: establish WeChat Group, regularly publish PICC picture information videos, example pictures, classic cases, maintenance materials, complications risk factors, and basic treatment methods, etc. If patients have any questions, they can apply for video conversations so that nursing staff can observe the situation on the spot and provide solutions; encourage patients to help each other and ask other patients for advice; post reminders, such as avoid pulling the catheter when changing clothes, and don't let sweat contaminate the interface in summer, etc.; open a green channel for patients to make appointments for PICC maintenance according to their own time; follow up regularly, telephone follow-up is conducted once a week in the first month of intubation, about 20 minutes each time, and home visits and telephone follow-ups are conducted twice a week after one month of intubation to understand the patient's health status, intubation situations, and self-care questions, etc., to provide answers in time.

## 1.3 Observation Indicators

The self-care ability score, health behavior score, and complications during intubation were taken as observation indicators. (1) Self-care ability score: The reference is the Exercise of Self-care Agency Scale (ESCA)<sup>[1]</sup>, the scale is a 4-level scoring scale, 4 dimensions (self-conception, self-responsibility, health knowledge level, self-care skills), 43 items, when the score increases, it means that the self-care ability is enhanced; (2) Health behavior score: the reference is the health promoting lifestyle profile (HPLP)<sup>[2]</sup>, the scale has 7 dimensions (mental health, interpersonal relationship, stress regulation, health responsibility, nutrition, physical activity, health education behavior). When the score increases, the behavior is healthier; (3) Complications during intubation: understand types of complications and number of occurrences during intubation.

## 1.4 Statistical Methods

Observation data were summarized and processed by SPSS23.0 statistical software. Meanwhile, the self-care ability score and health behavior score were expressed as ( $\bar{x} \pm s$ ) and t-test was performed. The complications during intubation were expressed as n/% and checked with  $\chi^2$  test,  $P<0.05$  indicates that

the comparison is significant.

## 2 Results

### 2.1 Self-Care Skills Score Analysis

There was no significant difference in ESCA scores

between the groups before the intervention,  $P>0.05$ ; the ESCA score of the experimental group was better than the control group after the intervention,  $P<0.05$ , see Table 1.

**Table 1.** Comparison of Self-Care Skills Score ( $\bar{x} \pm s$ )

Item (Score)	Control (n=80)		Experimental (n=80)	
	Before Intervention	After Intervention	Before Intervention	After Intervention
Self-Conception	15.13±6.42	15.66±6.64	15.15±6.04 <sup>&amp;</sup>	17.74±6.42 <sup>#</sup>
Self-Care Responsibility	11.13±3.85	11.57±4.03	11.55±4.06 <sup>&amp;</sup>	15.25±4.22 <sup>#</sup>
Health Knowledge Level	39.53±10.15	39.77±11.42	39.36±10.42 <sup>&amp;</sup>	47.06±11.64 <sup>#</sup>
Self-Care Skills	22.04±4.05	22.86±4.85	22.26±5.53 <sup>&amp;</sup>	26.14±5.88 <sup>#</sup>

Note: <sup>&</sup> $P>0.05$  (Comparison between groups before intervention); <sup>#</sup> $P<0.05$  (Comparison between groups after intervention)

### 2.2 Health Behavior Scores Analysis

There was no significant difference in HPLP scores between the groups before intervention,  $P>0.05$ ;

HPLP scores in the experimental group were better than those in the control group after intervention,  $P<0.05$ , see Table 2.

**Table 1.** Comparison of Self-Care Skills Score ( $\bar{x} \pm s$ )

Item (Score)	Control (n=80)		Experimental (n=80)	
	Before Intervention	After Intervention	Before Intervention	After Intervention
Mental Health	24.81±1.80	26.85±1.56	24.54±1.56 <sup>&amp;</sup>	36.70±1.29 <sup>#</sup>
Interpersonal Relationship	11.06±1.53	13.75±0.64	11.02±1.64 <sup>&amp;</sup>	17.53±0.87 <sup>#</sup>
Stress Regulation	12.58±1.60	14.00±1.07	12.66±1.75 <sup>&amp;</sup>	16.71±1.12 <sup>#</sup>
Health Responsibility	12.45±1.02	14.87±1.72	12.02±1.53 <sup>&amp;</sup>	17.10±1.16 <sup>#</sup>
Nutrition	10.47±2.06	13.03±1.58	10.86±0.72 <sup>&amp;</sup>	15.71±1.34 <sup>#</sup>
Physical Activity	7.16±1.15	9.76±1.20	7.54±1.14 <sup>&amp;</sup>	13.02±1.01 <sup>#</sup>
Health Education Behavior	93.52±19.12	100.30±18.43	93.45±18.37 <sup>&amp;</sup>	119.04±16.26 <sup>#</sup>

Note: <sup>&</sup> $P>0.05$  (Comparison between groups before intervention); <sup>#</sup> $P<0.05$  (Comparison between groups after intervention)

### 2.3 Analysis of Complications during Intubation

After investigation, the incidence of complications in the experimental group (2.50%) during intubation

was lower than that in the control group (10.00%), but there was no difference between the groups,  $P>0.05$ , see Table 3.

**Table 3.** Comparison of Complications during Intubation (n/%)

Group	Bleeding at the Puncture Site (No. of Cases)	Phlebitis (No. of Cases)	Catheter Blockage (No. of Cases)	Venous Thrombosis (No. of Cases)	Ectopic Catheter (No. of Cases)	Total Incidence (%)
Control (n=80)	3(3.75)	1(1.25)	2(2.50)	1(1.25)	1(1.25)	8(10.00)
Experimental (n=80)	1(1.25)	1(1.25)	0(0.00)	0(0.00)	0(0.00)	2(2.50)
$\chi^2$						3.8400
$P$						0.0500

## 3 Discussion

PICC catheterization is convenient for fixation, simple operation, and long retention time, which can avoid vascular damage caused by multiple venous punctures<sup>[3]</sup>. However, as tumor patients with PICC catheterization need to take the tube home, reducing unintended extubation during this period and reducing complications of catheterization have

become important research topics.

This study shows that continuous self-management education is more suitable for the application of tumor patients with PICC intubation. On the one hand, continuous self-management education can improve the self-care skills of patients with PICC intubation. Continuous self-management education can help patients acquire self-caring skills as soon as possible and enhance their self-care skills

through tracking and individualized guidance throughout the entire process of catheterization to reduce complications related to catheterization and avoid interruption of treatment or extubation due to complications such as venous thrombosis. Therefore, the ESCA score of the experimental group was better than the control group after intervention,  $P < 0.05$ . On the other hand, continuous self-management education can help PICC tumor patients maintain healthy behaviors by strengthening their health beliefs through regular phone calls and family visit follow-ups, answering questions and resolving confusions on WeChat groups, opening green channels, encouraging mutual assistance among patients<sup>[4]</sup>, enhancing self-care responsibility and promoting health behavior changes. Consequently, the HPLP scores of mental health, interpersonal relationship, and stress regulation in the experimental group were better than those of the control group after the intervention,  $P < 0.05$ . Therefore, it is concluded that continuous self-management education has the advantages of convenience, low-cost, real-time and other application advantages, which is suitable for PICC intubed tumor patients.

In summary, since continuous self-management education can not only improve the self-care ability of PICC patients with tumors, but also urge them to develop healthy behaviors, which is worthy of clinical promotion.

## References

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