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Retraction

Retracted: Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] J. Hu, L. Zhou, and J. Ding, "Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port," *Emergency Medicine International*, vol. 2022, Article ID 5496533, 5 pages, 2022.

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Research Article

Application of Chain Nursing Process in the Nursing of Elderly Inpatients with Implantable Venous Infusion Port

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Objective. To explore the application effects of chain nursing process in the nursing of elderly inpatients with implantable venous infusion port. *Methods*. 81 elderly inpatients who were treated with implantable venous infusion port in the hospital were selected between February 2018 and December 2021, and they were divided into the routine group (given routine nursing of implantable venous infusion port, $n = 40$) and the study group (given chain nursing process intervention on the basis of the routine group, $n = 41$) according to the random number table method. The patients in both groups were intervened for 1 month. The catheter-related indicators and incidence rates of adverse events (drug extravasation, local hematoma, infusion port blockage, catheter-related infection) were compared between the two groups of patients. Generalized Anxiety Disorder 7-item scale (GAD-7) and Athens Insomnia Scale (AIS) were used to compare the psychological states of the two groups before and after intervention, and Newcastle Satisfaction with Nursing Scale (NSNS) was adopted to compare the nursing satisfaction of patients before and after intervention. *Results*. After intervention, the catheter maintenance operation time in the study group was shorter than that in the routine group ($P < 0.05$), and there were no significant differences in the accidental extubation rate and re-intubation rate between the two groups ($P > 0.05$). The incidence rate of adverse reactions of 2.44% in the study group was lower than 15.00% in the routine group ($P < 0.05$). After intervention, the scores of GAD-7 and AIS in the two groups were reduced compared with those before intervention, and the above scores in the study group were lower than those in the routine group ($P < 0.05$). Before intervention, there were no significant differences in the NSNS scores between the two groups ($P > 0.05$). After intervention, the NSNS scores in the study group were higher than those in the routine group ($P < 0.05$). *Conclusion*. Chain nursing process can help to enhance the maintenance quality of implantable venous infusion port, reduce the incidence of adverse events, relieve the tension and anxiety, and improve the satisfaction of patients with nursing.

1. Introduction

Implantable venous infusion port is an infusion device that can be placed subcutaneously and indwelled for a long time. [1, 2]. Compared with peripheral venous catheterization and indwelling needle intravenous infusion, the incidence of local redness, drug extravasation and other adverse reactions is reduced, and the safety is high, and there is less damage to the lining of patients' blood vessels [3, 4].And has that advantage of convenient operation, reduced puncture frequency, convenient maintenance and the like. Therefore, for patients who need long-term infusion and infusion of chemotherapy drugs, the implantable venous port is an ideal infusion method. However, problems such as phlebitis and hematoma will also exist in the long-term use of intravenous infusion port, which will affect the treatment effect of patients. In addition, intravenous infusion port is relatively expensive compared with other intravenous infusion devices, and patients are often anxious because of worry about the infusion port being blocked [5]. Therefore, the standardized maintenance of implanted venous infusion port is of great significance to improve the treatment effect of patients and their negative emotions. The routine care of implanted venous infusion port includes daily maintenance,

health education, etc., which can prolong the use time of the infusion port to a certain extent, but the situation of tube blockage and drug solution extravasation still occurs, therefore, it is particularly important to take standardized, scientific and process-based nursing. Chain nursing process is based on chain nursing management model, which optimizes nursing operation process and conducts nursing operations in a scientific and standardized manner, thereby improving the quality of nursing. The existing research has confirmed the application value of chain nursing process in the critical patients, but few studies have reported its application effect in the maintenance of infusion port. This study adopted a chain nursing process to care for patients with implantable venous infusion port, aiming to improve the quality of nursing. The study was reported as follows.

2. Materials and Methods

2.1. General Information. A total of 81 elderly inpatients treated with implantable venous infusion port in our hospital from February 2018 to December 2021 were selected. Inclusion criteria: ① All received intravenous infusion therapy with implantable infusion port; ② All needed long-term or repeated intravenous infusion of drugs; ③ All signed informed consent notice; ④ Patients over 60 years old. Exclusion criteria: ① Abnormal coagulation function; ② Blood infectious diseases; ③ Combined mental disorders or depression; ④ Patients who lost follow-up during the intervention.

According to the random number table method, they were divided into a routine group and a study group. There were 40 patients in the routine group, including 19 males and 21 females; the age ranged from 60 to 71 years, with an average age of (65.13 ± 2.48) years; the time of infusion port placement were 2 to 13 months, with an average of (8.07 ± 2.15) months. There were 41 patients in the study group, including 18 males and 22 females, aged 61–72 years, with an average age of (65.83 ± 2.71) years; the time of infusion port placement: 2–15 months, with an average of (8.84 ± 2.62) months. There was no significant difference between the two groups in the above general data ($P > 0.05$).

3. Methods

The routine group received routine care of implantable venous infusion port. Before infusion, observed the puncture pointsof patients and observe whether there is blood oozing, swelling and liquid oozing, whether the fixation is firm, whether the peripheral skin is clean and dry and whether the patients have no subjective discomfort. At the same time, to the patient to do a good job of explanation, patients with cooperation. In the implementation of infusion operations strictly aseptic operation principle, in accordance with the infusion of implantable venous port operation process. The conventional disinfection radius was greater than 10~12 cm, and at the same time disinfected the operator's left thumb, index finger and middle finger. Arched the infusion port for vertical puncture, and withdrew after confirming that the needle was located in the infusion port, used the normal saline pulse to flush the tube and connected the infusion pipeline. When using multiple drugs, flushed the tube before and after each drug solution infusion. After the infusion was completed, the tube was flushed. The patients were instructed to place the limb on the side of the intravenous infusion port to avoid pressure or weight bearing, psychological care was given to the patients, and the precautions and nursing points were explained to the patients to relieve the patients' psychological burden.

The study group received chain nursing process intervention on the basis of the routine group (1) Set up chain nursing process group of implantable venous transfusion port, and in the implantable venous infusion port chain nursing process group, the group should include a peripheral venous catheter specialist nurse for infusion port maintenance, who was responsible for explaining the application and maintenance of implantable venous infusion port to general nurses. The head nurse organized the medical staff in the department to learn chain process nursing knowledge, and select an experienced clinician to explain the general principles and precautions of infusion port to the group members, as well as symptomatic treatment towards tube blockage, bleeding, infection, etc. (2) Specific implementation: ① The specialist nurse collected the basic information of the patients, including the time and material of infusion port, the patients' medication status, personal cultural level, understanding and cooperation ability, to establish regular maintenance files. ② Organized the nurses of the department to learn the professional knowledge of implantable venous infusion port together, including the basic process of puncture, daily aseptic operation process, application process and maintenance operation, and learn through video display and operation demonstration. All nurses would accept the operation standard assessment after the completion of the study. ③ Chain process care was performed in strict accordance with the routine steps of hand washing, packaging, specification of sterile areas, proper placement of objects, proper disinfection, and drying. Carefully evaluated the skin condition around the infusion port bag before operation. Washed hands and wore a mask. Opened the sterile field according to the principle of sterility, arranged the items used in the sterile area reasonably. First, used ethanol to disinfect around the injection seat according to the clockwise, anti-clockwise and clockwise directions, disinfected at least 3 times and the disinfection area met the requirements; wore gloves according to the aseptic principle. After connecting the positive pressure connector and the non-damaged needle, performed pre-flushing and exhausting. After vertical puncture and withdrawal, the normal saline was pre-flushed, and the extension tube was clamped to separate the syringe. After the puncture maintenance, followed the steps for fixed maintenance. After the wings were attached to the gauze, a 3M transparent applicator was used for tension-free fixation. The gauze wrapped the positive pressure joint and the tape was attached to the skin. Recorded the person who was responsible for maintenance and the time for it. ④ After each use of the infusion port, recorded it on the individual file. After maintenance, wrote down the maintenance time, whether there was any

adverse event such as blockage, bleeding, etc., the patients' individual feeling and the next maintenance time, signed and implemented the responsibility system management. ⑤ The head nurse checked the patients' individual nursing files and maintenance records every week, strictly assessed the nurses' operating procedures, and conducted separate training and intensive training for the nurses who lacked knowledge. Organized emergency drills for adverse events in the infusion port, and trained nurses for emergency treatment towards infusion port thrombosis blocked, strictly managed and standardized the operation process and maintenance steps.

3.1. Observation Indicators

(1) Catheter-related indicators: The operation time of catheter maintenance, the number of cases of accidental extubation and the number of cases of re-intubation were recorded and compared between the two groups before the intervention and 1 month after the intervention. Amog them, accidental extubation refers to the accidental dropping of the intubation tube or the patient's extubation without the consent of the medical staff, which also includes the extubation caused by improper operation of the medical staff.

(2) The occurrence of adverse events, the occurrence of drug solution extravasation, local hematoma, infusion port blockage and catheter-related infection were compared between the two groups. Overall incidence = number of patients with adverse events/total number of cases × 100%.

(3) Mental state: Before and after the intervention, the patients were assessed according to the Generalized Anxiety Disorder (GAD-7) [6] and Athens insomnia scale (AIS) [7]. GAD-7 Includes 7 descriptions related to tension, anxiety, and irritability, namely "nervous, anxious, or anxious," "unable to stop or control worrying," "worrying too much about everything," "difficult to relax," "uneasy and difficult to sit still," "easy to be irritable and annoyed," "feel that something bad happened," each description is scored as 0–3 points according to "not at all" ~ "almost every day," the higher the score is, the more severe anxiety the patients have. AIS includes 8 sleep-related descriptions. Each description is scored from 0 to 3 points according to "no problem" ~ "severe delay or completely so," with a total score of 0 to 24 points. The higher the score is, the more serious the sleep disorder is.

(4) Nursing satisfaction: Before the intervention and 1 month after the intervention, the patients' satisfaction was evaluated according to Newcastle satisfaction with nursing scales (NSNS) [8]. NSNS includes 19 questions related to nursing service and attitude, which can be summarized as nurses' operating norms, service attitude, and professionalism. Every aspect is scored as 1 to 5 points based on "very dissatisfied" to "very satisfied," and the total score of the three aspects is 20 points and 45 points respectively. The total score of the scale is 1–95 points. The higher the total score is, the higher the patients' satisfaction will be.

3.2. Statistical Methods. SPSS 19.0 statistical tool was used to compare and analyze the data. The normally distributed measurement data was analyzed by the independent sample t test, the count data was expressed by %, and χ^2 test was performed. The grade data was analyzed by Mann-whitney u test. $P < 0.05$ was considered to be that the difference is statistically significant.

4. Results

4.1. Catheter Maintenance-Related Indicators of the Two Groups. Before the intervention, there was no significant difference in the catheter maintenance operation time between the two groups ($P > 0.05$). After the intervention, the catheter maintenance operation time in the study group was shorter than that in the routine group ($P < 0.05$). There was no significant difference ($P > 0.05$), as shown in Table 1.

4.2. Comparison of the Incidence of Adverse Events between the Two Groups. The incidence of adverse reactions in the study group was 2.44%, which was lower than 15.00% in the routine group, and the difference was statistically significant ($P < 0.05$), as shown in Table 2.

4.3. Comparison of GAD-7 and AIS Scores between the Two Groups. Before the intervention, there was no significant difference in GAD-7 and AIS scores between the two groups ($P > 0.05$). After the intervention, the GAD-7 and AIS scores in the two groups were lower than those before the intervention, and the above scores in the study group were lower than those in the routine group ($P < 0.05$), as shown in Table 3.

4.4. Comparison of NSNS Scores between the Two Groups. Before the intervention (abbreviated as "before" in the table below), there was no significant difference in the NSNS score between the two groups ($P > 0.05$). After the intervention (abbreviated as "after" in the table below), the NSNS score in the study group was higher than that in the routine group ($P < 0.05$), as shown in Table 4.

5. Discussion

Under normal circumstances, elderly patients have many diseases and complicated conditions, with poor peripheral vascular elasticity and large brittleness, which are difficult to puncture. As an intravenous infusion device that can be indwelled in the body of a patient for a long time, the implantable infusion port can reduce the pain of repeated puncture in patients with long-term infusion, reduce the damage to blood vessels and tissues caused by multiple

Table 1: Catheter maintenance-related indicators of the two groups [$\overline{x} \pm s$; n(%)].

Group	n	Catheter maintenance operation time (min)		Accidental extubation rate	Reintubation rate
		Before intervention	After intervention		
Study group	41	12.23 ± 1.11	8.05 ± 0.76*	1 (2.44)	0 (0.00)
Routine group	40	12.19 ± 1.05	10.54 ± 0.94*	3 (7.50)	1 (2.50)
t/χ^2		0.167	13.125	1.105	1.0378
P		0.868	<0.001	0.293	0.308

Note: Compared to before intervention, * $P < 0.05$.

Table 2: Comparison of the incidence of adverse events between the two groups [n (%)].

Group	n	Extravasation	Local hematoma	Infusion port blockage	Catheter-related infection	Total incidence
Study group	41	0 (0.00)	0 (0.00)	1 (2.44)	0 (0.00)	1 (2.44)
Routine group	40	1 (2.50)	2 (5.00)	1 (2.50)	2 (5.00)	6 (15.00)
χ^2						4.046
P						0.044

Table 3: Comparison of GAD-7 and AIS scores between the two groups ($\overline{x} \pm s$, points).

Group	n	GAD-7		AIS	
		Before intervention	After intervention	Before intervention	After intervention
Study group	41	17.23 ± 2.32	10.51 ± 1.64*	18.12 ± 2.86	11.59 ± 1.04*
Routine group	40	17.19 ± 2.26	13.87 ± 1.99*	18.08 ± 2.74	14.02 ± 1.62*
t		0.079	8.302	0.064	8.286
P		0.938	<0.001	0.949	<0.001

Note: Compared to before intervention, * $P < 0.05$.

Table 4: Comparison of NSNS scores between the two groups ($\overline{x} \pm s$, points).

Group	n	Operating specifications		Service attitude		Professional level		Total score	
		Before	After	Before	After	Before	After	Before	After
Study group	41	13.41 ± 3.02	17.69 ± 1.15*	42.69 ± 1.28	43.58 ± 1.33	20.08 ± 1.24	27.68 ± 1.65*	76.18 ± 1.91	88.95 ± 2.41*
Routine group	40	13.44 ± 3.11	15.38 ± 1.09*	42.71 ± 1.29	43.19 ± 1.31	20.12 ± 1.22	24.83 ± 1.47*	76.27 ± 1.95	83.41 ± 2.09*
t		0.044	9.274	0.070	1.329	0.146	8.201	0.210	11.041
P		0.965	<0.001	0.944	0.188	0.884	<0.001	0.834	<0.001

Note: Compared to before intervention, * $P < 0.05$.

punctures, and reduce nutritional support drugs and chemotherapy. [9, 10]. However, the ability of peripheral vascular resistance to chemical and mechanical damage in elderly patients is decreased, which is prone to phlebitis. And due to the high cost of implanted venous infusion ports, once there is a risk of complications due to improper care, it will lead to extubation or catheter adverse events, which will cause additional economic burden to patients and increase the risk of nurse-patient conflict, which is not conducive to the improvement of patient satisfaction and quality of care [11]. Therefore, taking scientific and standardized implantable venous infusion port nursing can improve the clinical treatment effect and promote the recovery of patients. Routine nursing focuses on the maintenance during and after use, but lacks the overall nursing process of the system. While chain process nursing focuses on optimization process, clarifies the operating procedures and steps, emphasizes the standardized implementation of the nursing process, which will help to improve the quality of care and promote the nursing management of implantable venous infusion port.

The study carried out by Guo [12] showed that the use of chain process management can effectively reduce the contrast medium extravasation rate and severity in CT enhancement, which is similar to the results of this study. After the intervention of chain process nursing in this study, the data further showed that the catheter maintenance operation time of the patients in the study group was shorter than that of the routine group, and the incidence of adverse events was lower than that of the routine group ($P < 0.05$), which indicating that the use of chain process nursing could improve the work efficiency of nurses and reduce the incidence of adverse events. The reason may be that through the establishment of a chain process nursing group, specialist nurses would provide explanations and training, and clinicians would explain and analyze common adverse events in the infusion port, which would help to improve nurses and patients' understanding of infusion port. Process nursing training and operation skills assessment could help nurses improve their operational ability. At the patient level, due to their increased understanding of infusion port knowledge, they could actively improve their awareness of cooperation and assist nurses in completing catheter-related operations. Therefore, the time for catheter maintenance in the study group after intervention was shortened. Extravasation of drug solution, local swelling or catheter blockage

were mostly caused by the close attachment of the catheter to the vessel wall, or by the bending of the connection part of the injection seat and catheter due to the increase of the pressure of the clavicle on the injection seat when the chest and shoulder of the patient were retracted [13]. The chain nursing process strictly followed the operation steps and sequences, standardized the flushing work and aseptic operation principles, explained the body position and the attention of the punctured limb to the patient, which helped to reduce the incidence of the above-mentioned adverse events.

The data of this study also showed that after intervention, the GAD-7 and AIS scores of the patients in the study group were higher than those in the routine group, and the nursing satisfaction of the study group was higher than that of the routine group ($P < 0.05$), indicates that the chain nursing process can improve the poor psychological state of elderly patients. Wang et al. [14] also found that implementing detailed nursing care for breast cancer patients with implantable infusion port chemotherapy, the patients' self-care ability was also significantly improved. Chain process nursing emphasizes the optimization of nurses' operation process, and requires nurses to strictly follow the standardized nursing process in the implantable venous transfusion port. At the same time, the implementation of professional knowledge explanation and health education to patients in the process of catheterization can increase the trust of patients, improve their cooperation, and then improve the anxiety state of patients. In addition, records are kept on individual files after each use of the infusion port to identify and treat possible adverse conditions in time, which is conducive to enhancing patients' self-awareness, improving their self-care ability for the infusion port, helping patients recover better and faster, and improving patients' satisfaction with care.

To sum up, chain nursing process helps to improve the maintenance quality of implantable venous infusion port, reduce the incidence of adverse events, relieve the tension and anxiety of patients, and improve the satisfaction of patients. The shortcoming of this study was that the included sample size was small, and the sample size could be expanded in the future to further study the application value of chain care process.

Data Availability

The data can be obtained from the author upon reasonable request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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