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Assessing the Effect of Personalized Nursing on Thrombolytic Hemodialysis Patients After Arteriovenous Fistula Occlusion

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To cite this article:
Huixia Yu, Xiutin Li, Jian Li, Yi Yang, Guanmin Wu, Guiyan Wen. Assessing the Effect of Personalized Nursing on Thrombolytic Hemodialysis Patients After Arteriovenous Fistula Occlusion. *American Journal of Nursing Science*. Vol. 9, No. 5, 2020, pp. 320-323. doi: 10.11648/j.ajns.20200905.13

Abstract: Objective: To assess the effect of personalized nursing on thrombolytic hemodialysis patients after arteriovenous fistula occlusion. Methods: 92 patients who undergoing arteriovenous fistula in the hospital were invited to join our study. The time of they receive the treatment is from May 2015 to July 2020. In study beginning, the patients were randomly assigned to the control group (n = 46) and an intervention group (n = 46). The two groups receive different nursing intervention. The control group receive common nursing intervention. On the other hand, the intervention group patients receive personalized nursing intervention in treatment process. Result: In basic patient information, the patient basic status are similar [20 (47.6%) vs 23 (54.8%), 38.14 ± 9.12 vs 37.88 ± 10.07, 1.41 ± 0.75 vs 1.37 ± 0.69], that the gender, age and number of thrombolysis are not statistical significance ($p > 0.05$). In thrombolysis success rate research, the intervention group has higher thrombolysis success rate than that of control group [38 (90.5%) vs 32 (76.2%), $p = 0.016$]. In patient satisfaction research result, more intervention group patients make very well assessment than that of control group patients [19 (45.2%) vs 10 (23.8%), $p < 0.005$]. Conclusion: the personalized nursing intervention not only increase thrombolysis success rate but also improve the patient satisfaction in arteriovenous fistula occlusion.

Keywords: Arteriovenous Fistula, Hemodialysis, Nursing

1. Introduction

Based on 1966 report, the arteriovenous fistula (AVF) was first reported [1]. Nowadays, it has become the preferred and most widely used method for hemodialysis access. In the research guide, it indicated an AVF should be the first choice for hemodialysis patients as AVF had good safety and good stability [2, 3]. Base on some reports, the efficiency improvement of the success rate of a forearm AVF is saving limited vascular resources [4]. In addition, AVF is considered the most adequate access for hemodialysis therapy that it has longer durability, allows a safe and continuous vascular system approach, and is associated with a lower morbidity and mortality in comparison with arteriovenous grafts and catheters [5, 6]. However, the patients who undergoing central venous catheter therapy have higher infection rates, cardiovascular events, and hospitalization in reports [7, 8]. According to recent report, the AVF method has attracted increasing attentions due to its ability of preserving the energy invariant automatically and its high-order accuracy in time. In addition, a large number of works have been devoted to solve various partial differential equations using the AVF technique in time discretization incorporating with different space discretization methods in.

Base on the report, the number of hemodialysis patients has been increasing by approximately 5% each year [9]. However,

in a wide range of nursing intervention areas, hemodialysis patients are exposed to non-compliance risks [10, 11]. Personalized nursing intervention is an effective tool to foster appropriate self-care management of patients while lowering healthcare treatment costs and to empower the patient of sick by improving their knowledge, attitudes, concerns, and practices regarding the illness [12, 13]. The aim of this article is that assess the effect of personalized nursing on thrombolytic hemodialysis patients after arteriovenous fistula occlusion [7, 10, 12].

2. Methods

2.1. Participants Enrollment and Survey Methods

92 patients who undergoing arteriovenous fistula in the hospital were invited to join our study. The time of they receive the treatment is from May 2015 to July 2020. In study beginning, the patients were randomly assigned to the control group (n = 46) and an intervention group (n = 46). The two groups receive different nursing intervention. The control group receives common nursing intervention. On the other hand, the intervention group patients receive personalized nursing intervention in treatment process. In addition, we collected the related information from treatment outcome and data of patient, the information includes basic patient information, thrombolysis success rate and patient satisfaction. The data of patient from medical recording and questionnaire, the basic patient information, thrombolysis success rate and Time of thrombolysis are collected from medical recording, the patient satisfaction is collected from sample questionnaire that contains very well level, good level and dissatisfaction

level.

In personalized nursing intervention, we provide the suitable nursing intervention to the patients, according to patient's personal status. Firstly, we collect the patient information from medical recording and interview of patient. Secondly, based on the collected patient information to develop personalized care services. Thirdly, we collect the feedback after personalized nursing intervention, that we will improve the personalized nursing intervention base on the feedback of patients.

Their inclusion criteria were: (1) The patient successfully complete AVF; (2) Patients volunteered to participate our study; (3) They did not suffer from severe complications. Their withdraw criteria were: (1) Poor mental status; (2) Patients change their treatment structure.

2.2. Statistical Analysis

Our data analyzer performed the statistical analysis by SPSS 22.0. The P value, t-test and chi-square test were associated with collection result were analyzed. Besides, the mean standard deviation for statistical description.

3. Result

In Table 1, it indicated gender, age and number of thrombolysis in basic patient information. Between the intervention group and control group, their basic status are similar [20 (47.6%) vs 23 (54.8%), 38.14±9.12 vs 37.88±10.07, 1.41±0.75 vs 1.37±0.69], that the gender, age and number of thrombolysis are not statistical significance (p > 0.05).

Table 1. Basic patient information (Mean±SD).

Projects	Gender (Female)	Age (year)	Number of thrombolysis
Intervention group (n = 42)	20 (47.6%)	38.14±9.12	1.41±0.75
Control group (n = 42)	23 (54.8%)	37.88±10.07	1.37±0.69
t	0.181	0.441	0.466
P value	0.716	0.803	0.162

In thrombolysis success rate research, it shows thrombolysis success rate of patient and time of thrombolysis (Table 2). The intervention group has higher thrombolysis success rate than that of control group [38 (90.5%) vs 32 (76.2%), p = 0.016]. In similar, the intervention group patients receive shorter time of thrombolysis than that of control group patient (1.3±1.2 vs 1.6±1.7, p = 0.044).

Table 2. Thrombolysis success rate.

Projects	thrombolysis success rate, n (%)	Time of thrombolysis (hour)
Intervention group (n = 42)	38 (90.5%)	1.3±1.2
Control group (n = 42)	32 (76.2%)	1.6±1.7
t	5.441	3.197
P value	0.016	0.044

The patient satisfaction was collected after treatment. It contains 3 levels: very well level, good level and dissatisfaction level (Table 3). In research result, more intervention group patients make very well assessment than that of control group patients [19 (45.2%) vs 10 (23.8%), p < 0.005]. however, the assessment status of good level is

similar between the two groups [21 (50.0%) vs 25 (59.5%), p = 0.162]. In assessment of dissatisfaction level, although intervention group has less this assessment than that of control group, their simple number are too less [2 (4.8%) vs 7 (16.7%)].

Table 3. *Patient satisfaction.*

Projects	Very well	Good	Dissatisfaction
Intervention group (n = 42)	19 (45.2%)	21 (50.0%)	2 (4.8%)
Control group (n = 42)	10 (23.8%)	25 (59.5%)	7 (16.7%)
P value	< 0.005	0.162	< 0.005

4. Discussion

The AVF is defined that is an abnormal passageway between an artery and a vein, which can be congenital or acquired due to pathologic process [14]. As vascular access is necessary for hemodialysis, the people thinks that AVF is considered the preferable access route for maintenance hemodialysis [15]. Base on the report, patients undergoing hemodialysis are approximately exposed to 300 punctures per year to their arteriovenous fistula. The pain of AVF puncture is common among the patients as acute and chronic pain which reported in more than 82% and 92% of them [16]. Additionally, the people advocate creating the first AVF as far distally in the upper extremity as possible. Because doctor preserve as many future vascular access options as possible and provide a long segment of arterialized vein for repeated venipuncture [17]. Base on some reports, patients with artificial blood vessel blockage time will affect the success rate of thrombolysis, that the success rate of thrombolysis will increase with the shorter clogging time [15]. In the work of nurses, the success of puncture directly affects the success of thrombolysis [14].

Based on the above results, the personalized nursing intervention not only increase thrombolysis success rate but also improve the patient satisfaction in arteriovenous fistula occlusion. In basic patient information, the basic patient information of two group are similar, that basic patient status of two group are similar in this study. Therefore, this study can eliminate most of the interfering factors. In thrombolysis success rate research, the intervention group patients have better performance than that of control group, that intervention group has higher thrombolysis success rate and shorter time of thrombolysis. In patient satisfaction, the intervention group patients provide more very well level assessments in this study, so the personalized nursing intervention improve the patient satisfaction by suitable nursing intervention. But the number of good level assessment are similar in the two-group assessing. In limitation, the simple size limits the accuracy of results in outcome of this study, that the result is not statistical significance in this study. In addition, the collect period is too long in patients, that hospital facilities and treatment procedures have varied during this period, these factors may also influence the results of this study.

5. Conclusion

In conclusion, the personalized nursing intervention improves thrombolysis success rate and the patient satisfaction in arteriovenous fistula occlusion. The intervention group result indicated that they not only had better performance in thrombolysis success rate but also they has shorter time of thrombolysis. Although the good assessment of patient satisfaction is similar in two group, the intervention group has more very well assessment in the research result of patient satisfaction.

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