

Empathy Reduces the Recurrence Rate of Venipuncture-induced Syncope

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Abstract: Objective: To demonstrate the effect of empathy on reducing the recurrence rate of venipuncture-induced syncope among patients with a history of fainting. Methods: A total of 300 patients with a history of fainting at the sight of blood or a needle who visited our outpatient department for blood draws during December 2013 and December 2018 participated in this study and were randomly divided into a control group (98 cases of mild syncope and 52 of severe syncope) and an experimental group (95 cases of mild syncope and 55 of severe syncope). The control group followed the traditional procedure for drawing blood; in addition to the traditional procedure, a psychological nursing intervention was applied to the experimental group. Results: The experimental group had a recurrence rate significantly lower than the control group (6.7% vs 37.3%, $P = 0.001$); particularly, there was a statistically significant difference between the recurrence rates of the mild-syncope subgroups (0.1% vs 12.2%, $P = 0.02$). In terms of severe syncope, the patients in the experimental group showed a lower recurrence risk compared to those in the control group (16.4% vs 84%, $P = 0.0001$), and the difference has statistical significance. Conclusion: Empathy is an effective psychological nursing intervention against the recurrence rate of venipuncture-induced syncope among patients with a history of fainting.

Keywords: Empathy, Venipuncture-induced Syncope, Venous Blood Draw

1. Introduction

Blood-injection-injury (BII) phobia is also known as syncope (fainting) during venipuncture or venipuncture-induced syncope in China [1], namely a sense of extreme fear in response to the sight of blood, injection, or injury, or on the verge of an injection, injury, or exposure to blood [2]. Clinically, venipuncture-induced syncope is characterized by mental fatigue, vertigo, paleness, palpitations, weakness of limbs, and even shock. These clinical symptoms not only affect the procedure of drawing blood but pose a real threat to an individual's physical health [3-7]. As an acute response to the feared stimuli, it may interrupt regular nursing procedures and in worse cases, cause excessive anxiety among other patients waiting for blood draws, and even aggravate the patients' states of illness and lead to secondary injuries. Our

statistical analysis shows that fainting occurred in approximately 0.15-0.26% of the outpatient blood draws during the past three years. It was reported that the sensitivity of pain nerve, tension, puncture times, operation skills, environment and understanding to puncture were independent influencing factors of venipuncture-induced syncope during intravenous blood collection. Through these factors, clinical nursing can formulate corresponding nursing intervention measures, which may help to reduce the incidence of needle fainting and ensure the smooth collection of blood samples [8]. Zhou SY's research suggested that it could reduce the recurrence rate of venipuncture-induced syncope and raise the patients' satisfaction with the help of Outpatient nursing plan [9]. Empathy refers to the perspective-taking, read others' thoughts and feelings during communication. JIANG Wei's

research showed that endocrinology nurses' empathy is the influencing factor of patients' depressive mood and NK index. The narrative medical intervention based on empathy should be tried and extended in clinical practice [10]. To reduce the recurrence rate of venipuncture-induced syncope among patients with a history of fainting, a psychological nursing intervention, i.e., empathy, was introduced into this study to observe its effect on some patients with a history of fainting. The study is reported as follows.

2. Method

2.1. Research Subjects

The research subjects of this study include 300 individuals aged between 18 and 70 (average 41 ± 1.5) who visited a 3A hospital for outpatient blood draws from December 2013 to December 2018. Inclusion criteria: a history of syncope (fainting) during venipuncture; ease of movement and a clear mind; barrier-free communication; no severe organic diseases. Exclusion criteria: underage individuals unable to receive blood draws independently; low intelligence; mental illnesses. All participants agreed to receive psychological guidance.

2.2. Research Methods

The patients receiving venipuncture and having a history of fainting induced by venipuncture were randomly divided into a control group and an experimental group, which were further divided into two subgroups respectively by the levels of syncope (mild and severe syncope). Specifically, the control group was formed by 60 female and 90 male participants at the average age of 41 ± 1.7 , including 98 cases of mild syncope and 52 of severe syncope; the experimental group had 55 females and 95 males at the average age of 40 ± 2.1 , including 95 mild cases and 55 severe cases.

The control group followed the traditional procedure for drawing blood while the experimental group adopted the same procedure under psychological guidance. Details are given as follows.

2.2.1. Pre-blood Collection

Assessment: Before blood collection, researchers closely observed all patients and assessed their manifestations, facial expressions, and muscle tone, with the typical signs including stiffness, nervousness, paleness, sweaty palms, abnormal intonation and speed of utterance, and a posture of resistance.

2.2.2. Preparation for Blood Collection

- (i) When communicating with the experimental group, researchers developed empathy between themselves and the patients and tried to comfort them by explaining that feeling nervous was a natural reaction to blood collection and almost everyone felt the same way.
- (ii) Under professional guidance, the patients tended to describe their symptoms, such as faster heartbeats and sweating. In this case, the researchers should explain to

the patients that these were normal body responses shared by many individuals, even the researchers themselves, during blood draws. Besides, it was pointed out that in most cases, the slight pain induced by a blood draw would not cause fainting, and there was a slight risk of fainting during venipuncture as long as the patients followed the researchers' guidance. The explanation and guidance were expected to help the patients build up confidence. In addition, a smaller-sized needle was used for drawing blood to avoid repetition of the procedure and minimize the pain.

2.2.3. Preparation for Venipuncture

The researchers assured the patients that many procedures before a blood draw were painless so that the patients could stay calm and relaxed. For those having a history of fainting, the researchers should ask them to close their eyes and try to breathe deeply, comfort them by repeating that they had not made the venipuncture, and complete the venipuncture quickly even before the patients noticed. If the venipuncture was made successfully, the researchers should inform the patients and pay a compliment to them immediately (e.g., "You did it!" "You totally got this!" "You did great!"). The patients would smile and feel relieved to hear the compliment and encouragement from the researchers.

2.2.4. Post-blood Collection

- (i) The patients were reminded to press tightly the place where blood had been drawn and find a seat to take a break. Meanwhile, the researchers should ask them whether they would like some warm water.
- (ii) The researchers should praise the patients again for their bravery in overcoming the venipuncture-induced syncope, thereby bringing great joy to the patients based on their successful experience. Also, good communication with nurses could heighten the patients' sense of satisfaction.

2.3. Outcome Measure(s)

Outcomes of the psychological nursing intervention were measured by whether a patient fainted during venipuncture.

2.4. Statistical Analysis

In this study, the statistical analysis software SPSS22.0 was used for data analysis. Enumeration data were expressed in (n%). The inter-group comparison was performed using the chi-square test. $P < 0.05$ indicated a difference of statistical significance.

3. Results

3.1. Comparison of General Dates Between the Experimental and Control Groups

No statistically significant difference was found in the sex ratio and age distribution between the experimental group and the control group, the mild-syncope

subgroups, and the severe-syncope subgroups, which indicates a high degree of comparability.

3.2. Comparison Between Recurrence Rates of the Experimental and Control Groups

After the psychological nursing intervention, only 6.67% of the experimental group fainted during blood draws; in contrast, the control group reported 37.34% of recurrent syncope.

In other words, the recurrence rate of the experimental group is markedly lower than the control group, and the difference has statistical significance ($P < 0.05$). See Table 1.

3.3. Comparison Between Recurrence Rates and Severity of Recurrent Syncope of the Severe-syncope Subgroups

Thanks to the psychological nursing intervention, the severe-syncope subgroup has a recurrence rate much lower than that of the matched control subgroup, and the difference is statistically significant ($P < 0.05$). In terms of the severity of

recurrent syncope, the severe-syncope subgroup of the experimental group reported 0.00% of severe cases while 50% of the matched controls still suffered from severe syncope, that is, the recurrence rate of severe syncope of the experimental group is remarkably lower than that of the control group. See Table 1.

3.4. Comparison Between Recurrence Rates and Severity of Recurrent Syncope of the Mild-syncope Subgroups

After the psychological nursing intervention, the mild-syncope subgroup of the experimental group shows a considerably lower recurrence rate in comparison to that of the matched control subgroup, and the difference has statistical significance ($P < 0.05$). As to the severity of recurrent syncope, no patient in the mild-syncope subgroup of the experimental group (0.00%) complained of severe syncope whereas the mild-syncope subgroup of the control group reported that 2.04% of the patients experienced severe syncope. See Table 1.

Table 1. Comparison of venipuncture-induced syncope recurrence.

Group	Subgroup	Number of Patients	Severity of Recurrent Syncope			Total Recurrent Cases	Subgroup Recurrence Rate	Group Recurrence Rate
			None	Mild	Severe			
Control group (150 cases)	Mild-syncope Subgroup	98	86/62.66%	10/18.67%	2/18.67%	12	12.2%	37.3%
	Severe-syncope Subgroup	52	8/15.38%	18/34.62%	26/50.00%	44	84%	
Experimental group (150 cases)	Mild-syncope Subgroup	95	94/98.95%	1/1.05%	0/0.00%	1	0.1%	6.7%
	Severe-syncope Subgroup	55	46/83.64%	9/16.36%	0/0.00%	9	16.4%	

Note: The recurrence of venipuncture-induced syncope in the experimental and control groups is examined by the chi-squared test, and the results are $\chi^2=41.1$ and $P=0.001$, indicating a statistically significant difference; according to the chi-squared test results of the mild-syncope subgroups ($\chi^2=9.619$, $P=0.002$), the difference has statistical significance; as to the severe-syncope subgroups, the chi-squared test results ($\chi^2=49$, $P=0.0001$) also suggest a difference of statistical significance.

4. Discussion

Venipuncture-induced syncope occurs in response to the stimulation of various organ systems in the body. The pathogenesis is as follows: pain stimulus \rightarrow faster pulse and higher blood pressure \rightarrow peripheral blood vessel dilation \rightarrow compensatory hypofunction \rightarrow over-excitation of vagus nerve \rightarrow slower pulse, lower blood pressure, and a rapid decline in peripheral blood vessel resistance \rightarrow insufficient blood flow to the brain \rightarrow conscious disturbance \rightarrow syncope [11]. For those having a history of venipuncture-induced syncope, they tend to feel deeply worried about fainting again during the procedure. The diagnosis of venipuncture-induced syncope depends on the following conditions: (1) primary condition: loss of consciousness; (2) secondary conditions: a. paleness; b. nausea; c. vertigo; d. palpitations; e. blood pressure $< 80/60$ mmHg; f. heart rate < 50 beats/min; g. sweating. In the presence of the primary diagnostic condition and at least three of the secondary conditions, a patient should be diagnosed with venipuncture-induced syncope. Presently, there is a lack of clinical indexes

that strictly identify the degree of venipuncture-induced syncope. Based on Zhang *et al.* [12], the present study classified all participants as patients with either mild or severe syncope.

If a patient fainted during earlier onsets and experienced recurrent syncope, this was considered as a case of severe syncope; otherwise, the patient was deemed to have mild syncope. According to Huang [13], in 2015, about 0.83% of the students participating in the pre-college physical examination at a 3A hospital experienced venipuncture-induced syncope; it was noted that in addition to gaining a thorough understanding of the underlying mechanism, nurses should be aware that the medical environment for drawing blood, their attitude towards each individual, and their communication and medical skills also play a crucial role in minimizing the occurrence of syncope during blood draws. As a fundamental procedure, a venous blood draw requires a nurse to demonstrate his/her professional knowledge and skills and remain patient and kind to each patient [14].

It has been proven that emotional reactions can result in a series of physiological changes [15]. Domestic researchers view mental stress as a major psychological factor associated

with syncope during venipuncture [16]. In Ritz et al., venipuncture-induced syncope is classified as an anxiety disorder [17]. A patient with venipuncture-induced syncope may find the feeling of anxiety uncontrollable even though he/she is well aware that the fear has reached an excessive level [18]. Under this circumstance, empathy appears to be an ideal nursing intervention for maintaining a good relationship between nurses and patients [19]. Based on the empathy theory, a nurse is supposed to look at a situation from a patient's point of view and try to understand and enter into the patient's feelings, thereby relieving the patient's pain, anxiety, and the feeling of loneliness [20, 21]. Importantly, a nurse must avoid talking to a patient in a condescending manner. Otherwise, the patient is likely to become increasingly nervous because his/her feelings are neglected.

In our study, empathy, as a psychological nursing intervention, was found to play a significant role in reducing the recurrence rate of venipuncture-induced syncope at varying severity levels. During the subsequent blood collection, the cases of severe syncope induced by venipuncture were reduced in both the experimental and control groups; compared to the venipuncture-induced syncope during the initial blood collection, the patients in both groups experienced a relief of symptoms (severe → mild, or mild → asymptomatic). According to the control group, this improvement reflects the patients' confidence in the hospital, including its medical environment, blood drawing procedures, and nursing techniques. Particularly, the ease of symptoms becomes even more distinct when the procedure of drawing blood is combined with psychological nursing intervention. As venipuncture-induced syncope can cause serious consequences, especially for the older and infirm patients, reducing the recurrence rate of venipuncture-induced syncope is very important, which can reduce the occurrence of medical adverse events, and indirectly helps medical practitioners earn a patient's trust and improve the doctor-patient relationship. Therefore, empathy should be emphasized in clinical practice, nurses should keep learning and extending their knowledge and provide humanistic care for patients in day-to-day work to raise their level of satisfaction with medical and nursing services.

5. Conclusion

Venipuncture-induced syncope often occurs in patients with anxiety or the patients with a history of syncope (fainting) during venipuncture, which may interrupt regular nursing procedures and even aggravate the patients' states of illness and lead to secondary injuries. In order to reduce the recurrence rate of venipuncture-induced syncope among patients with a history of fainting, empathy was introduced into this study to observe its effect on some patients with a history of fainting. And the result shows the recurrence rate of the experimental group is markedly lower than the control group. So empathy is an effective psychological nursing intervention against the recurrence rate of venipuncture-

induced syncope among patients with a history of fainting, can help to maintain the doctor-patient relationship based on mutual trust and understanding. Nurses should empathize with patients with a history of fainting during the procedure of drawing blood to help the patients overcome the fear of blood collection or the patients with anxiety.

Limitations

The experimental results may be biased because this study discussed the effect of the psychological nursing intervention without regard to patients' conditions of constitution, whether they were fasting before blood collection, and the prognosis of diseases during the two procedures of drawing blood.

Cite this Paper

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