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Analysis of Nurse's Reflection on Success or Failure of Blood ithdrawal by Vein Types

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Abstract - We'll put this information to good use in nursing school. We thus requested 19 clinical nurses to perform a blood withdrawal procedure using four distinct kinds of blood vein simulator models, each with varying degrees of difficulty. In this research, we questioned nurses to learn about their thoughts on the elements that determine whether or not a patient is able to draw blood successfully. In light of the findings, we qualitatively assessed their mental state while using the approach.

Keywords— Blood Withdrawal Technique, Nurse, Reflection, Tacit Knowledge

I. Introduction

Practical nursing skills include "tacit knowledge" such as "proficient art" and "knacks." This research visualises this information from numerous data points, including brain waves, cerebral blood flow, line of sight, blood vein extension pressure upon injection, and nurses' awareness. Nursing students will benefit from the visual representations of information we provide. Nineteen clinical nurses were requested to perform a blood withdrawal method on five different kinds of simulator models for blood vessels with varying degrees of difficulty in order to get various data points. In order to have a better understanding of the reflections of nurses, we conducted an interview with each nurse to get their take on what makes blood draws successful or unsuccessful. In light of the findings, we qualitatively assessed their mental state while using the approach.

II. Course Of Study On Tacit Knowledge Of Nursing Skills And ICT

Since 2008, Majima and colleagues have been doing research on tacit knowledge of nursing skills and ICT-based learning assistance systems. Recently, Wu Y and colleagues [1] have published findings on tacit knowledge relevant to clinical nursing practise in Korea [1]. Only the possible application of modern ICT tools for the nursing community was outlined by Skiba D.J.[2] (2017) and Stephen K.[3](2016).

Research on tacit strategies in nursing abilities has been undertaken by Majima and others to date. Many nurses believe that once they have found a vein, they can administer an intravenous injection. This is based on interviews with nurses. "A sensation like entering a blood vessel fast (kukutto) or smoothly (sutto)" is a common way for them to describe the sense of a job well done.

Despite this, many believe that expressing how they really feel is tough. Novice nursing students, on the other hand, believe that the aptitude for methods is just the ability to recall procedures. When it comes to learning assistance, it is critical that beginners understand processes before they are brought closer to expert qualities.

III. Experiment Overview

Everyone agreed to participate in the study. Here is a breakdown of the steps involved in the experiment:

1) The first step is to inform the participants of the experiment's protocols and acquire their agreement.
2) During the experiment, participants extract blood from a simulated arm model of a blood artery five times each, totaling 20 times. When blood is drawn, the model of blood artery is not disclosed to the subjects.
3) About an hour is needed for each participant.
4) In an interview once all of the measurements have been completed, urge the participants to reflect on their findings.

A simulation arm model is shown in Fig. 1 connected to a human being for the experiment environment. According to Fig. 2, this experiment employed an arm simulation model that included several kinds of blood vessels.

Figure.1: Experiment setting and simulation arm model

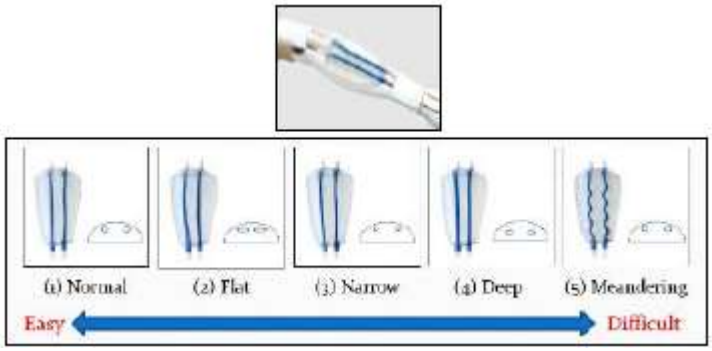

Figure. 2. Blood vein types of simulation arm modelX

IV. Results And Discussion

A *Success and failure in blood drawing*

A total of 20 trials yielded an 8.8 percent success rate for blood draws. Figure 3 depicts the success rate by kind of blood vein.

There was a 47.3 percent success rate for the whole study. When it comes to "flat" blood veins, the most successful veins were 57.1 percent. For "deep" ones, the lowest percentage was 15.3%.

"Narrow" and "meandering" blood veins took less than a minute to practise, but "flat" and "regular" ones took somewhat longer. Blood veins that had a poor success rate required almost 80 seconds to detect: "deep" veins. The more time it takes to insert a catheter into a vein, the more difficult it is. This research implies that even if a nurse fails to discover a blood vein, they will try again.

B *Practice time for blood drawing*

According to the table1, the average time for a blood drawing is indicated. "Narrow" and "meandering" blood vessels took less than a minute to practise, but "flat" and "regular" blood vessels took somewhat longer. The most difficult blood arteries to operate on, those with the lowest success rates, required the longest time to operate on: over 80 seconds. Effort is directly related to difficulties in blood vessels. According to this study, nurses keep trying to discover blood veins even if they've already failed.

C *Nurses' reflections*

"I can recognise a reverse blood flow," "The blood was drawn nicely," "I started to feel less resistance," and "I felt like I had burst bubble wrap (puchi') after experiencing resistance" were some of the comments made by the nurses. For the causes of failure, they claimed, "I couldn't locate (a deep blood vein)," a mistake in picking the blood vein, "I didn't enter a needle deeply enough," and the blood vessel had to be reinserted since it had slid out. "I am thinking about numerous things when taking blood," said the nurse (No. 9) with the highest

success rate (60 percent) and the most "deep" success instances (17 times, 85 percent). The grounds behind my failure have been sensuously removed (after I have failed)." If the nurse used Donald A. Schön's reflection-inaction[5] in blood drawing, then she likely established a trial theory to exclude potential causes of failure and then took action in a hypothesis-testing manner.

Table I. Average Success Rate and Required Time by Type of Blood Vessel

Blood vessel Type	Narrow	Meandering	Flat	Normal	Deep
Success rate(%)	53.7	48.4	57.1	44.0	15.3
Average time (s)	56.4	58.8	62.4	66.0	77.2
MIN(s)	21.0	24.0	23.0	31.0	21.0
MAX(s)	159.0	160.0	242.0	122.0	253.0
SD	26.0	23.9	35.5	29.7	42.0

V. Conclusion

We found comparable patterns in the outcomes of nurses' reflections on the moment of success or failure [1]. As the No. 9 nurse said, Donald A. Schön's reflection-in-action[2] was conducted in blood drawing as an instant reaction practise, a trial theory was constructed to minimise causes for failure, and action was taken in a hypothesis-testing manner. Using many data sources, such as brain waves, cerebral blood flow, line of sight, and blood vein extension pressure upon injection, we want to continue this research in the future.

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