A Pilot Study of Student Nurses' Self-efficacy in Performing Venipuncture

Christine Nebocat, DHEd, MLS (ASCP)^{CM}, CHES®

Farmingdale State College
State University of New York

Introduction

Background

Upon completing a Bachelor of Science Nursing (BSN) program, a graduate may be expected to perform venipuncture on patients. Without hands-on phlebotomy training included in the curriculum, self-efficacy is absent.

Currently, there are 20 nursing programs on Long Island in New York. Upon surveying these programs, 100% do not offer any phlebotomy training to nursing students (Nebocat, 2016). In an area with such a large population, it is essential to adequately train medical professionals responsible for care, especially nurses who have the most patient contact.

Study Aim:

While clinical skills have been studied generally in the nursing student population, the specific practice of phlebotomy and its effect on self-efficacy and competence has yet to be investigated for student nurses.

Review of Literature

Bandura (1994) explained that self-efficacy is an individual's perceived capability to accomplish a task. Individuals with higher levels of self-efficacy are more likely to approach a challenging task directly, rather than avoid the task. Individuals with low self-efficacy are more prone to stress and depression, due to viewing failed pursuits as personal deficiencies (Bandura, 1994).

"Higher levels of self-efficacy are related to higher levels of learning, effort, and achievement"… therefore, "self-efficacy for learning is particularly salient in the assessment of current expected performance and future outcomes" (Fenning & May, 2013, p. 645).

Inappropriate collection of laboratory specimens may:

- ☑increase patient discomfort
- ☑delay results necessary for diagnoses and treatment
- ☑is associated with a higher rate of test abandonment

(Karcher & Lehman, 2014)

Methodology

Overview:

Intervention group (n=19): received an informational phlebotomy training seminar

Comparison group (n=20): did not receive training seminar

Groups were selected using random stratified sampling

All participants:

- ✓Observed an expert instructor verbally state each step while performing phlebotomy on an artificial arm
- ✓Performed phlebotomy on the artificial arm
- ✓Completed a demographic questionnaire
- ✓Completed the phlebotomy self-efficacy scale

Instrumentation:

Phlebotomy Self-Efficacy Scale (PSES)- a Likert-type instrument used to measure phlebotomy self-efficacy

Intervention:

- ❖ **Lecture:** Intro to blood collection, phlebotomy duties, legal issues, universal safety protocols, proper use of equipment, venous anatomy, vein selection, factors to consider, technique, sample requirements, patient complications, post-vein care
- ❖ Presentation and identification of phlebotomy-related supplies
- ❖ Demonstration of equipment
- ❖ Tourniquet practice
- ❖ Practice of venipuncture procedure on partner without needles, prior to drawing from the artificial arm
- ❖ Phlebotomy demonstration by expert instructor

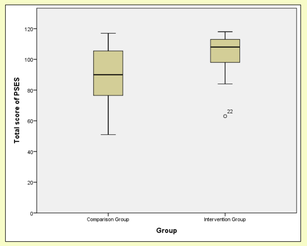
Results

Sample Demographics

	Treatment Group: Comparison (*n* = 20)	Treatment Group: Intervention (*n* = 19)	*p*-value
Gender			
Male	6	4	0.522
Female	14	15	
Classification			
Sophomore	4	3	0.880
Junior	10	11	
Senior	6	5	
Employed in medical field prior to RN school?			
No	12	14	0.365
Yes	8	5	
Age			
n	20	19	0.194
Mean (SD)	25.85 (7.066)	23.26 (4.080)	
Median	23.00	22.00	
Min – Max	18 – 42	19 – 33	
Clinical Hours Completed			
n	16	13	0.156
Mean (SD)	194.63 (144.44)	304.85 (211.09)	
Median	215.00	240.00	
Min – Max	32 – 560	21 – 700	

A Chi-Square test was used to obtain the *p*-values for testing the independence of the Group variable and the variables Gender, Classification, and Prior Medical Employment. A Mann-Whitney test was used to obtain the *p*-values for testing for significant differences in the groups for the variables age and clinical hours completed.

Phlebotomy Self-efficacy Scores



Test Statistics[a]

	Total score of PSES
Mann-Whitney U	99.500
Wilcoxon W	309.500
Z	-2.545
Asymp. Sig. (2-tailed)	.011
Exact Sig. [2*(1-tailed Sig.)]	.010[b]

a. Grouping Variable: Group

b. Not corrected for ties.

Total score of PSES

Group	Mean	N	Std. Deviation	Minimum	Maximum	Median
Comparison Group	89.35	20	18.236	51	117	90.00
Intervention Group	103.37	19	14.546	63	118	108.00
Total	96.18	39	17.801	51	118	101.00

*Cronbach's alpha for the 12 items on the PSES instrument is 0.829, suggesting that the items have relatively high internal consistency.

Data Analysis

- ➢A hands-on phlebotomy seminar **will increase** the student nurses' level of self-efficacy.

$U = 99.500$, $N1 = 20$, $N2 = 19$, $p = 0.01$

- ➢There is **no relationship** between clinical hours completed and self-efficacy.

$r(29) = 0.076$, $p = 0.695$

- ➢Prior employment in a health-related career **does not affect** self-efficacy.

$U = 127.000$, $N1 = 26$, $N2 = 13$, $p = 0.219$

- ➢Academic grade level has **no effect** on self-efficacy.

$\chi 2(2) = 3.260$, $p = 0.196$

Conclusion

Phlebotomy is a skill that is currently not included in the nursing curriculum in Long Island, NY. However, it is a skill that is often warranted for a practicing registered nurse. A hands-on phlebotomy training seminar will increase the undergraduate nurse's level of self-efficacy, ultimately improving patient care. Clinical hours completed, employment in a health-related career, and academic grade level did not affect PSES scores. Students did not practice phlebotomy in the field prior to this study, and therefore these variables did not influence PSES scores.

While it may be difficult to find room in an already rigorous curriculum, a supplemental phlebotomy training would be advantageous for a student pursing his or her BSN, to improve levels of self-efficacy.

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