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

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Phlebotomy training is currently not included in undergraduate nursing programs in Long Island, New York. After graduating, nurses are often expected to perform venipuncture on patients in the field. Without adequate clinical practice, there is potential for phlebotomy-related complications such as inappropriate sample collection, self-inflicted injuries, and undue harm to patients. The level of self-efficacy correlates with a student’s perception of how capable he or she is in accomplishing a task. Individuals with increased self-efficacy are more likely to succeed in the field. In this study, undergraduate nursing students from a local Long Island college were separated into two groups using random stratified sampling. This sampling method ensured an equal number of sophomore, junior, and senior students in each group. The activity was developed to determine if a hands-on phlebotomy training seminar would improve phlebotomy self-efficacy. The intervention group received a 3-hour seminar that included a lecture and hands-on learning component, prior to practicing venipuncture on an artificial arm. The comparison group were only able to view a brief demonstration of venipuncture on an artificial arm. Both groups were given the opportunity to perform phlebotomy on the artificial arm. After the activity, the students completed a Phlebotomy Self-Efficacy Scale (PSES). The scores of the PSES from the two groups of students were compared. There was a significant difference in PSES scores between the comparison group and the intervention group. The intervention group, who attended the full 3-hour hands-on seminar, had higher self-efficacy scores than those in the comparison group, who did not have the full training. These findings support the inclusion of a hands-on phlebotomy training to improve levels of self-efficacy in nursing students. Academic grade level, prior employment in the medical field, and clinical hours were also compared to the PSES scores. There were no significant findings in comparing these factors to the scores in either group separately, or combined. This was likely due to the fact that regardless of academic year, prior employment, or number of clinical hours, the students were still not being exposed to phlebotomy. Therefore, the level of self-efficacy was not affected by any one of these factors. This study highlights a gap in the undergraduate nursing curricula. Any hands-on clinical experiences that will improve self-efficacy, and is practiced in the field of nursing, should be incorporated into nursing curricula for the benefit of all patients.

Title:
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Keywords:
Phlebotomy, Self-efficacy and Simulation training

References:
Summary:
Venipuncture is a skill that is often required in the field of nursing, but not typically included in nursing curricula. This results in a lack of student nurses' self-efficacy in regard to performing phlebotomy. By incorporating a hands-on training, self-efficacy will improve, benefiting both nurses and patients.

Content Outline:
I. Introduction

A. Phlebotomy training is not typically included in undergraduate nursing curricula. Without this specialized training students lack self-confidence in performing venipuncture, and may not be aware of potential phlebotomy-related complications for nursing staff and patients.

B. Improving self-efficacy, in regard to the skill of venipuncture, can be achieved through a hands-on simulation learning experience with an artificial arm.

II. Body

A. Main Point #1- Hands-on phlebotomy training improves level of students' self-efficacy.
1. Supporting point #1- In a quantitative study, students who participated in a 3-hour hands-on phlebotomy training seminar had increased self-efficacy scores in comparison with a group who did not receive the hands-on training seminar.

   a) A Mann Whitney test was used to compare self-efficacy scores for a comparison and intervention group. The results were statistically significant, $U = 99.500, N1 = 20, N2 = 19, p = 0.010$, with the intervention group ($M = 103.37, SD = 14.546$) scoring significantly higher than the comparison group ($M = 89.35, SD = 18.236$).

B. Main Point #2- Academic grade level, prior employment in the medical field, and number of clinical hours have no effect on phlebotomy self-efficacy scores.

1. Supporting point #1- Because students are not exposed to phlebotomy during a particular academic year, academic grade level has no effect on self-efficacy.

   a) A Kruskal Wallis test was performed to assess if academic grade level had an effect on phlebotomy. The test was not statistically significant, $\chi^2(2) = 3.260, p = 0.196$.

2. Supporting point #2- Students do not typically practice venipuncture during clinical rotations. Therefore, the number of clinical hours completed do not correlate with self-efficacy scores.

   a) A Pearson correlation test was performed to compare the number of clinical hours students completed and PSES scores. The results were not significant, $r(29) = 0.076, p = 0.695$.

3. Supporting point #3- If an undergraduate nursing student held a position in the medical field prior to beginning nursing school, often it did not require them to perform venipuncture. Therefore, prior medical-related positions will not necessarily improve phlebotomy self-efficacy.

   a) A Mann-Whitney test was not statistically significant, $U = 127.000, N1 = 26, N2 = 13, p = 0.219$, indicating that prior clinical experience in the medical field no effect on phlebotomy self-efficacy.

III. Conclusion

A. A hands-on phlebotomy training seminar will improve student nurses’ level of self-efficacy.

B. Academic grade level, number of completed clinical hours, and prior employment in the medical field are not factors that will improve phlebotomy self-efficacy.

C. Any skill that improves self-efficacy of students, and is practiced in the field of nursing, should be incorporated into the nursing curricula.

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**Author Summary:** Christine M. Nebocat is an Assistant Professor in the Medical Laboratory Technology Department at Farmingdale State College-SUNY, in Long Island, New York. Graduating with a Bachelor of Science in Medical Technology from Marist College in Poughkeepsie, NY, Christine began her career in the field of clinical laboratory science. While maintaining her position in the laboratory, she completed her Master’s degree, and has been teaching as a full-time professor for four years.