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TOOLS OF THE TRADE: IMPROVING NURSES ABILITY TO ACCESS AND EVALUATE RESEARCH

Phyllis Helms

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by

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ABSTRACT

TOOLS OF THE TRADE: IMPROVING
NURSES' ABILITY TO ACCESS
AND EVALUATE
RESEARCH

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In their daily practice, nurses continuously seek answers to clinical questions. It is critical that they know how to find evidence-based guidelines, standards, and research to guide their care and optimize patient outcomes. However, there are few studies of processes to increase nurses' ability to find and analyze evidence for practice. Therefore, the purpose of this longitudinal quasi-experimental descriptive study was to measure the effect of an educational project on nurses' knowledge and frequency of using library database resources to acquire and appraise evidence-based practice (EBP). A secondary purpose was to examine the effects of nurse characteristics (educational background, professional certification, and years of experience) on nurses' library resource knowledge and usage. Twenty-eight nurses participated in the project by attending the one-hour training class

(covering how to find resources for EBP data using library information services and how to critique research articles), and by completing a short Likert-type questionnaire at three intervals: before the class, after the class, and five months later. The questionnaire was designed for this project. Mean scores for the knowledge and ability section of the questionnaire had statistically significant improvements for four of the five questions, and the mean scores for the frequency section had statistically significant improvements for four of the five questions. Only one question in the knowledge and ability section showed slight decline five months after the intervention. Nurses' educational characteristics had no effect on mean scores. Overall, the brief training influenced the nurses' ability to search for, find, and appraise evidence-based information.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Evidenced-Based Practice (EBP) is not only the foundation for nursing practice but is known to optimize healthier outcomes, improve the quality of care, as well as lower healthcare costs (Stevens, 2013). EBP uses the best evidence created from previous research studies, along with the expertise of the nurse to make changes for best practices, and improve patient outcomes.

Nurses, the largest single group of providers in the healthcare field, require an extensive amount of information to perform nursing assessments, interventions, care planning, safely administer medications, and patient teaching (McKnight & Peet, 2000). Additionally, much information has to be mastered regarding drugs, diseases, and diagnostic information (Mi, 2006). Throughout any given workday approximately one question arises for every two patients regarding the care being rendered (Del Fiol, Workman, & Gorman, 2014); therefore, a nurse's information-seeking behavior is extremely important in providing evidence-based answers to aid in clinical decision-making to best meet the needs of their patients.

As front-line providers of care, nurses have a professional obligation to use standards of care and the best evidence of effectiveness in delivering care. EBP is generally considered to be a sequential and progressive process of asking a clinical question, performing a literature search to find evidence of the question, appraising and evaluating related research articles, applying and integrating the evidence into practice, and

evaluating the results (Doody & doody, 2011). Thus, when nurses have clinical questions, they must first acquire and appraise evidence on best practices before they can integrate this knowledge into patient care. This act of EBP can be seen and demonstrated in what is known as the Iowa model (Doody & Doody, 2011).

The Iowa model entails seven steps on how to introduce, develop, and evaluate EBP, which guides a nursing practice (Doody & Doody, 2011). Step one is the topic in question. Step Two is forming a team so that everyone is on the same page. This includes all the stakeholders that will be involved in the practice change. Step three involves evidence retrieval by searching electronic databases (CINAHL, Medline, and Cochrane). Step four involves grading the evidence, which consists of the critique, and using only those research studies that have the most rigor. These are used to create the change in practice then. Step five consists of developing an EBP standard, with help from the team and planning for piloting the new change. Step Six implements the EBP and piloting the new change in practice. Step seven involves evaluation by measuring the outcome variable to see if the change in practice has improved patient care (Doody & Doody, 2011).

Recent studies indicate that there are several barriers that hinder a nurse's ability to find evidence-based answers. These barriers include lack of time (Miller, Graves, Jones, & Sievert, 2010; Royle et al., 2000), low confidence leading to limited frequency in utilizing databases (Griffiths & Riddington, 2001), personal doubt in finding a useful answer (Del Fiol et al., 2014), perception that a question is not urgent or important (Del Fiol et al., 2014), limited access to information resources (Marshall, Morgan, Klem, Thompson, & Wells, 2014; Royle et al., 2000), utilizing outdated resources (McKnight & Peet, 2000), misperceptions that medical libraries are just for physicians (Mi, 2006), lack of familiarity

with evidence-based practice (Davidson & Brown, 2014), negative attitudes about research (Davidson & Brown, 2014), inadequate computer technology skills (Miller, Graves, Jones, & Sievert, 2010), lack of computer literacy skills (Komolafe & Onatoh, 2008), preference in consulting colleagues (Urquhart & Davies, 1997), and lack of knowledge in seeking clinical information (Kumaran & Chipanshi, 2015).

Miller et al. (2010) performed a multi-phase multi-method design with public health nurses and school nurses in Missouri. The goal was to build information-seeking literacy skills. Their pre-assessment results were based on the most frequent database usage (N=178). They found Google is used at 69%, CDC at 42%, Yahoo at 20%, and PubMed and MedlinePlus at 12%. Barriers to finding information and using new skills to search the literature included lack of time, poor computer skills, limited or no computer/Internet access, workplace firewalls in place preventing searching, or more practice time needed to improve search skills.

Another research group (Royle et al., 2000) with registered nurses on a medical teaching unit in a tertiary hospital in Canada conducted a study on best available evidence for healthcare. The ultimate goal of this study was to provide healthcare based on the best available evidence by utilizing appropriate information resources and establishing a workplace in which information-seeking skills could be acquired, as well as applying the information into their nursing practice. Multi-methods were used which included a Clinical Information System (CLINT). The CLINT intervention was designed to promote evidence-based nursing practice and entailed creating different workstations with installed software and access to online resources that included AskRx, Ask Advice, RNdex Top 100, HSLinks, Scientific American Medicine, Manual of Medical-Surgical Nursing Care,

Diagnostic and Laboratory Tests Reference, CD-Derma Series, Netscape, Case-of-the-Week, and their hospital information system (IHIS). They reported the five most frequently used databases were the Manual of Medical-Surgical Nursing Care, the IHIS, Ask Advice, Scientific American Medicine, and AskRX. The day-shift nurses most frequently accessed quick reference materials to apply fast facts, whereas the night-shift nurses were more likely to access materials and resources that took longer to read and would augment their knowledge. Barriers identified were lack of confidence, lack of time, limited skills, limited access, nurses' attitudes, as well as feeling that it was inappropriate to ask for help.

A study indicating a lack of confidence in information-seeking behavior by Griffiths and Riddington (2001) included a quantitative structured questionnaire with 82 nurses in a teaching hospital in the UK. The questionnaire consisted of 19 questions asking specifically about the knowledge, confidence, and frequency of use for CINAHL and MEDLINE databases and the Cochrane Library. They reported 45% expressed a lack of confidence or had never heard of MEDLINE, and 87% were unconfident in using the Cochrane Library or had not heard of it. One participant stated, "Regular use of databases is not the norm… although a minority are very confident and use databases regularly" (Griiffiths and Riddington, 2001).

A systematic review was performed by Del Fiol, Workman, and Gorman (2014) assessing seventy-two articles (obtained from MEDLINE, CINAHL, and Scopus) to examine the questions that are raised by clinicians in the context of patient care and decision making. They discovered a mean frequency of questions raised was 0.57 (95% Cl, 0.38-0.77) per patient seen, and clinicians pursued 51% (36%-66%) of questions and found answers to 78% (67%-88%) of those they pursued. This suggests that at least one question

for every two patients arise during practice and half of these questions are never pursued. Instead, the question goes unanswered. This study revealed barriers that prevented the clinicians from pursuing a question that included forgetting about the question, lack of time, doubtful that a useful answer exists, or they perceived that the question was not urgent or important enough to answer.

Research conducted in Rochester, New York by Marshall et al. (2014) evaluated the value and influence of hospital library services on clinical care and its relationship to patient outcomes. This multiple methods research was created to build upon an earlier Rochester study, and to find out if nurses had access to library resources to determine if this would change their nursing practice. It was found that over 80% of the nurses indicated that having the information saved them time, and found them to be invaluable in-patient care.

A review by McKnight and Peet (2000) analyzed thirty-nine studies and nine reviews published since 1990. Their goal was to find the kind of information that a nurse seeks, and where they seek it since nurses are the largest single group of healthcare providers. This review revealed that nurses utilize outdated resources (a book or journal), or they rely on what they learned in school rather than search for the most up-to-date practice. Additionally, it was reported that they would seek out a colleague and ask them what to do instead of looking up the information.

A study was performed in Michigan (Mi, 2006) with neonatal intensive care nurses. Their goal was to develop the nurses' information literacy skills, as well as to help them become familiar with the services and resources of their library. During a pre-training assessment, they found that some nurses thought the library services were only for

physicians and thus rarely used the library. Additionally, they reported that Yahoo and the internet as their main search tool with CINAHL and MedlinePlus being at the bottom of the list.

Exploratory research with 15 registered nurses in San Diego, CA (Davidson & Brown, 2014) was done to explore a nurse's willingness to identify and question dinosaur-like rituals when seeking information. They revealed several barriers to evidence-based decision making as being embedded in an outdated deeply-rooted practice or loss of momentum required to continue the change process (loss of drive), which indicates they are not willing to create a practice change.

A quantitative study performed by Komolafe and Onatoh (2008) was conducted to determine the usage of library and information resources by clinical nurses in Nigeria. The goal of the study was to determine a clinical nurses' usage of the library and information resources. It was reported that 16% never used the library due to either their lack of time, or clash in their schedule of when the library was open, or lack of knowledge of computer usage, or they felt the library lacked availability of current information.

A multi-phase multi-method study of nursing professionals in the United Kingdom (Urquhart & Davies, 1997) looked at the value and impact of the information after seeking it and how it contributed to their future nursing practice. It was reported that the nurses consulted a colleague over 50% of the time for patient care purposes, but it is worth noting that over 90% of the respondents reported that the information that they obtained from the library added to their knowledge.

A two-phase multi-method study in Canada (Kumaran & Chipanshi, 2015) explored information-seeking behavior with internationally educated RNs. It was found

that Google and health websites were their most frequent place to look for information. The barriers found were lack of time, lack of information-seeking skills, uncertain about where to look, or unable to find information.

These identified barriers and behaviors hinder a nurse's ability to provide accurate best care and up-to-date information in clinical decision-making. In hospital settings with robust electronic library resources, most barriers can be alleviated by educating and familiarizing nurses with their availability and use. However, there are few studies that address how to educate nurses on the process of EBP, as well as how to go about obtaining the best evidence for a practice change and then putting it into place. Therefore, the purpose of this study is to determine a nurses' knowledge and frequency of using library resources to acquire and appraise EBP (before and after an educational and hands-on intervention), and to examine the effects of nurse characteristics (education, professional certification, and years of experience) on nurses' library resource knowledge and usage.

CHAPTER 2

METHODOLOGY

A longitudinal quasi-experimental descriptive study comprised of thirty-two registered nurses from three specialty units (infusion, hospice, and oncology) in a private hospital in Arlington, Texas were the focus of this study. The nurse's anonymity was maintained by each nurse assigning themselves a unique and anonymous code using their mother's first initial and last initial, their mother's birth month, and their mother's birth day. The participants were instructed to use this unique code on each survey, instead of their name, during each survey session. No other identifiable information was written on the survey to protect their privacy. Approval for this project was obtained from Texas Health Resource's Institutional Review Board (IRB) and the University of Texas at Arlington's IRB.

The intervention consisted of each nurse attending a one-hour training class covering how to find resources for EBP data using the library information services, as well as a quick instruction on how to critique research articles. These one-hour classes were offered on five different occasions over a three-week period to give all of the participants an opportunity to make one class. The nurse scientist instructor used power-point slides and provided printed reference handouts to guide her class on both topics and for illustration purposes. The topic of using and accessing library information services was demonstrated using CINAHL, PubMed, Lexicomp, UpToDate, and Nursing Reference Center databases while instructing on how to perform targeted and focused searches, as

well as applying various filters while searching. These databases were chosen because of their known reliability and credibility in the healthcare profession in finding research articles. The topic of how to appraise and critique research was explored by demonstrating essential aspects involved in quantitative and qualitative research. This entailed demonstrating the significant types of research, as well as briefly covering how to critique or appraise problem statements, literature review, research questions/hypotheses, the conceptual/theoretical framework, choosing participants, data collection, evaluating sampling, data analysis, and conclusions/recommendations.

Each participant was asked to complete an anonymous and brief paper survey before the class, after the class, and five months later to assess the intervention. In addition to the paper surveys, the participants' unit manager required them to complete an assignment that consisted of finding and appraising a research article using four specific electronic databases and printing a page of their searches to turn in. The manager required competency was not used in this research data.

A thorough literature search was performed to find a suitable questionnaire that evaluates a health care workers' knowledge and use of library information resources and electronic databases. After much review, no suitable questionnaire was found, the investigators created a ten-item Likert-scale questionnaire (See Appendices A, B, & C) divided into three sections to measure a nurses' perception of their knowledge/ability to use electronic databases for EBP, to measure their frequency of using electronic databases, and to determine the level of education and experience of each participant. The knowledge/ability section contained five questions asking the participant to rate their ability in knowing how to (1) contact a librarian for help, (2) find resources for EPB from

research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, and Lexicomp, (3) perform targeted literature searches using search terms and subject headings, (4) evaluate quality of research articles, and (5) get evidence-based answers to clinical questions. These five questions used a 5-point answer system ranging from strongly disagree (1), disagree (2), neutral (3), agree (4), or strongly disagree (5).

The second part of the questionnaire, frequency of use section, contained five questions asking the participant to rate frequency of how often they (1) contacted a librarian for help, (2) found resources for EPB from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc., (3) performed targeted literature searches using search terms and subject headings, (4) evaluated quality of research articles, and (5) got evidence-based answers to clinical questions. These five questions used a 4-point answer system ranging from none (0), once (1), twice (2), or 3 or more times (3).

The third section of the questionnaire listed three questions about the participant's educational background and years of experience: (1) What is your level of education? (Associate degree or Bachelor's degree or higher), (2) How long have you been a nurse? (less than three years, four-to-ten years, or more than ten years), and (3) Do you have any of the professional nurse certifications (CCRN, CSRNN, RN-BC, OCN, etc.)? (No, I do not have any professional nursing certifications; or yes, I have one or more professional nursing certifications). These three questions were created to explore the question of if education has any influence on a nurses' ability to use and access library information resources for EBP.

When designing the questionnaire, care was taken to ensure construct validity by verifying that questions on the survey represented vital factors needed for information-seeking behavior, as well as having clinicians review the survey for potential omissions, clarity, and comprehensiveness. The content to be covered in the class was designed to ensure content validity by focusing on relevant information-seeking behavior needed for EBP, and by utilizing an experienced medical librarian to review and edit the proposed presentation.

CHAPTER 3

RESULTS

Twenty-eight nurses participated in the project by attending a training class and completing questionnaires at three intervals (before the training, immediately after the training, and five months after the training). The response rate was 100%. Researchers used nurses' self-assigned codes to link all three surveys together. However, the researchers removed six sets of questionnaires from consideration due to the nurses' self-assigned codes not matching. The remaining twenty-two nurses (n=22) had questionnaires with matching codes on all three survey intervals, and we used this data in the information collection and data analysis process.

Nine (41%) of the twenty-two nurses had an associate's degree, and thirteen (59%) had a bachelor's degree or higher. Eight nurses (36%) had three years of experience or less, seven nurses (32%) had four-to-ten years of experience, and seven nurses (32%) had more than ten years of experience. Eleven of the nurses (50%) had obtained one or more professional certifications, and the remaining eleven nurses (50%) had not (See Appendix D).

Friedman's test compared the mean scores for the nurses' Likert-scale self-ratings of their knowledge and ability questions for the three measurement times. The Friedman test is a non-parametric statistic alternative to one-way analysis of variance (ANOVA) with repeated measures. The researchers used the Wilcoxon signed-rank test to measure the mean scores of the nurses' Likert-scale self-ratings for the frequency of information-

seeking activities. The Wilcoxon signed-rank test is the non-parametric statistic alternative to t-tests. Additionally, the researchers performed pairwise comparisons using Wilcoxon signed-rank test to control for Type 1 errors at the .05 level using Fisher's least significant difference (LSD) procedure.

3.1 Knowledge and Ability Section

The knowledge and ability section of the questionnaire included five questions that asked nurses to rate their information-seeking knowledge and ability using a 5-point Likert-scale ranging from Strongly Disagree (1) through Strongly Agree (5). The first question, *I know how to contact a librarian for help*, had a statistically significant improvement over the three survey time periods, $\chi 2$ (2) = 20.462, p = .00004; indicating a large effect of .47 using Kendall's coefficient of concordance. There was a statistically significant improvement in the nurses' mean scores comparing before the class (3.1) to after the class (4.3), p = .0000009, and comparing before the class to 5 months after the class (4.1), p = .002 (See Appendix E).

For the second question, *I know how to find resources for EBP from research databases*, mean scores did not have a substantial increase in each survey period and were not considered statistically significant.

The third question, *I know how to perform targeted literature searches using search terms and subject headings,* had significant statistical mean increases with each survey period, $\chi 2$ (2) = 9.962, p = .007 with a Kendall's W of .23, indicating a small to medium effect. There was a significant statistical improvement in the mean for all three surveys from 3.7 before the class, to 4.0 after the class, and to 4.5 five months later. Additionally, there were statistically significant improvements in the nurses' ratings of their ability to

perform targeted literature searches when comparing before the class to after the class (p = .003), before the class to 5 months later (p = .015), and after the class to five months later (p = .021) (See Appendix E).

For the fourth question, *I know how to evaluate the quality of research articles* showed statistically significant improvements, $\chi 2$ (2) = 9.148, p = .01, with a Kendall's W of .21, indicating a small to medium effect. There were improvements in the mean scores from 3.6 before the class to 4.1 after the class (p=.0004), and to 4.2 five months later (NS). There was a statistically significant improvement in the nurses' self-ratings from before the class compared to five months later (p=.028) (See Appendix E).

The fifth question, *I know how to get EB answers to my clinical questions* also had statistically significant improvements in means scores, $\chi 2$ (2) = 8.1, p = .02, with a Kendall's W of .18 indicating a small effect. There was an improvement in the nurses' self-ratings with each survey period, from 3.7 before the class, to 4.0 after the class, and to 4.4 at five months after the class. The nurses' self-rating improvements were statistically significant when comparing before the class to after class (p = .002), and from before the class to 5 months later (p = .025) (See Appendix E).

3.2 Frequency Section

The frequency section of the survey included five questions asking the nurses about how often they engaged in information-seeking behavior within the last three months. Wilcoxon signed-rank test was used to compare the mean scores at two times: before the class and five months after the class.

There was not a statistically significant improvement in the mean scores for the nurses' self-ratings for the first question on *contacting a librarian for help*. The second

question asking how often the nurses' *found resources for EBP from research databases* showed statistically significant improvements in mean scores from 1.1 before the class to 1.9 at the five-month interval after the class ($Z = -2.492$, $p < .01$, $r = .38$) (See Appendix F). The third question asking how often the nurses' *performed targeted literature searches using search terms and subject headings* indicated improvement in the mean ratings from 0.7 before the class to 1.5 five months after the class ($Z = -2.539$, $p < .01$, $d = .38$) (See Appendix F).

The fourth question asking how often the nurses' *evaluated the quality of research articles* showed statistically significant improvements in mean scores from 0.5 before the class to 1.3 five months after the class ($Z = -2.569$, $p < .01$, $d = .39$) (See Appendix F). The fifth question asking how often the nurses' *got evidence-based answers to their clinical questions* showed statistically significant improvements in mean scores from 0.7 before the class to 1.5 five months after the class ($Z = -2.322$, $p < .02$, $d = .35$) (See Appendix F).

Overall, Kendall's coefficient of concordance indicated the intervention had a medium effect on the nurses' actions for all items except the first one.

3.3 Nurses' Educational Background

The researchers did not find any statistically significant effect on any of the nurses' educational background characteristics when compared to their self-ratings of their information-seeking knowledge and ability, or their frequency of information seeking behavior. Nurse characteristics included educational background (associate's degree or bachelor's degree or higher), experience (less than three years, four-to-ten years or more than ten years), and have they obtained one or more professional nursing certifications (yes or no).

3.4 Instrument Psychometrics

Since the questionnaire was newly developed for this project, the psychometric analysis was an important consideration. The researchers analyzed the scores using coefficient alpha, item analyses, and correlation matrices, coefficient alpha evaluating internal consistency reliability for the overall questionnaire was .87 and .95 (before the class and five months later). All items were well within the recommended range of .30-.70 for item-total correlation. No items substantially changed the coefficient alpha if deleted. The questionnaire had two separate sections, and those coefficient alphas for the knowledge/ability section were .90, .95 and .97 for the three survey times. There were two survey times for the frequency section, and those coefficient alphas were .87 at baseline and at five months. These scores exceed the .70 to .80 levels recommended for new instruments.

CHAPTER 4

DISCUSSION

The purpose of this study was to determine a nurses' knowledge and frequency of using library resources to acquire and appraise EBP (before and after an educational and hands-on intervention), and to examine the effects of nurse characteristics (education, professional certification, and years of experience) on nurses' library resource knowledge and usage. The findings of this research indicate that the training class improved the nurses' information-seeking behavior when faced with clinical questions. The researchers were impressed to find that most mean scores improved during each survey period, especially given that the learning theory indicates a common and normal decrease in knowledge and skills of newly learned material over time. Yet, in this study, the only decline was the question about knowing how to contact a librarian for help. This question had a slight decline from immediately after the training to five months after the training. It is possible that the training class reminded the nurses about how to contact a librarian, prompting them to score higher immediately following the training class, and during the five month interval the nurses' did not practice the steps of contacting a librarian for help; therefore, their knowledge and skill level decreased over time.

The question that had the highest self-rating score was during the last survey period; the question is assessing nurse's knowledge of how to perform targeted literature searches. Five months after the training class, the nurses' rated this item a 4.5 out of 5 possible points.

This outcome is an encouraging finding given that nurses are often engaging in information-seeking behavior for the most up-to-date practices.

For the frequency of use part of the survey, the question with the highest mean score was how often a nurse has engaged in finding EBP from research databases. This improvement is promising since a nurses' ability to find evidence-based answers to their questions is crucial to nursing practice.

Nurses' educational background had no effect on any of the mean scores during the entire survey periods. It would make sense that a nurse with a Bachelor's degree or higher would have more knowledge and experience in using the library's information resources and databases than a nurse with a two-year degree because the additional education required for these higher degrees usually cover this information during their academics. However, this hypothesis did not hold to be true. It is also possible that the nurses that hold an associate's degree are currently pursuing a bachelor's degree, since this is a requirement of this hospital, and have already been educated on library resources and databases.

4.1 Limitations

A limitation of this study is the Likert self-answer questionnaire. This universal type of survey measures a self-report from the participant, which has the potential for bias, as well as the potential for the participant to avoid scoring in any of the extreme ends of the scale which could skew results. Another limitation of this study is the small sample size, indicating that these results are not generalizable to the entire population of nurses.

4.2 Conclusions

Considering a nurse often engages in information-seeking behavior to find answers to their clinical questions, this research has proved helpful in determining if training is

useful in teaching nurses how to find EBP to guide and improve their practice and improve patient outcomes. The questionnaire, designed specifically for this study, showed evidence of reliability and validity. More research is needed, using a larger population, on a nurses' ability to find and appraise research and clinical evidence during their quest for evidence-based information. A single fast-paced one-hour training class improved the mean scores of the nurses' self-ratings of their information-seeking behavior, and that improvement persisted five months after the class indicating that Nurse Supervisors have the ability to improve a nurse's practice on the unit by taking the time to help them with their information-seeking needs. The question arises of how a longer training class would impact a nurses' ability to find and assess evidence-based literature when seeking clinical answers.

APPENDIX A

QUESTIONNAIRE BEFORE THE CLASS

Please complete this questionnaire BEFORE the class begins (both pages).

To maintain your anonymity, please create a unique code of your mother's first and last name initials and the numeric date and month of her birth. (Example: Mary Smith with a birthday of July 14 has a code of MS0714).

Write your code here – Be sure to remember it!!! (You'll use the same code for another survey in a few months) _____

Mother's first initial/mother's last initial/mother's birth month/ mother's birth day (NOT year)

Please circle your answer from 1 = Strongly Disagree to 5 = Strongly Agree.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

I know how to:	
1. Contact a librarian for help	Strongly Disagree 1 2 3 4 5 Strongly Agree
2. Find resources for evidence-based practice from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc.	Strongly Disagree 1 2 3 4 5 Strongly Agree
3. Perform targeted literature searches using search terms and subject headings.	Strongly Disagree 1 2 3 4 5 Strongly Agree
4. Evaluate quality of research articles.	Strongly Disagree 1 2 3 4 5 Strongly Agree
5. Get evidence-based answers to my clinical questions.	Strongly Disagree 1 2 3 4 5 Strongly Agree

Please circle your answer from 0-3 below:

In the past 3 months, how often have you:	0 = None 1 = Once, 2 = Twice, 3 = 3 or more
6. Contacted a librarian for help	0 1 2 3
7. Found resources for evidence-based practice from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc.	0 1 2 3
8. Performed targeted literature searches using search terms and subject headings.	0 1 2 3
9. Evaluated quality of research articles.	0 1 2 3
10. Gotten evidence-based answers to my clinical questions.	0 1 2 3

11. What is your level of education?
    a. Associate degree b. Bachelor's degree or higher

12. How long have you been a nurse?
    a. Less than 3 years b. 4-10 years c. More than ten years

13. Do you have any of the professional nurse certifications (CCRN, CSRNN, RN-BC, OCN, etc)?
    - ☐ No, I don't have any professional nursing certifications
    - ☐ Yes, I have one or more professional nursing certifications

APPENDIX B

QUESTIONNAIRE IMMEDIATELY AFTER THE CLASS

Please complete this questionnaire AFTER completing the class.

To maintain your anonymity, please create a unique code of your mother's first and last name initials and the numeric date and month of her birth. (Example: Mary Smith with a birthday of July 14 has a code of MS0714).

Write your code here

_____

Mother's first initial/mother's last initial/mother's birth month/ mother's birth day (NOT year)

Please circle your answer from 1 = Strongly Disagree to 5 = Strongly Agree.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

I know how to:	SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree
1. Contact a librarian for help	Strongly Disagree 1 2 3 4 5 Strongly Agree
2. Find resources for evidence-based practice from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc.	Strongly Disagree 1 2 3 4 5 Strongly Agree
3. Perform targeted literature searches using search terms and subject headings.	Strongly Disagree 1 2 3 4 5 Strongly Agree
4. Evaluate quality of research articles.	Strongly Disagree 1 2 3 4 5 Strongly Agree
5. Get evidence-based answers to my clinical questions.	Strongly Disagree 1 2 3 4 5 Strongly Agree

APPENDIX C

QUESTIONNAIRE FIVE MONTHS AFTER THE CLASS

Please complete this questionnaire FIVE-MONTHS AFTER class (both pages).

To maintain your anonymity, please create a unique code of your mother's first and last name initials and the numeric date and month of her birth. (Example: Mary Smith with a birthday of July 14 has a code of MS0714).

Write your code here – Be sure to remember it!!! (You'll use the same code for another survey in a few months) _____

Mother's first initial/mother's last initial/mother's birth month/ mother's birth day (NOT year)

Please circle your answer from 1 = Strongly Disagree to 5 = Strongly Agree.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

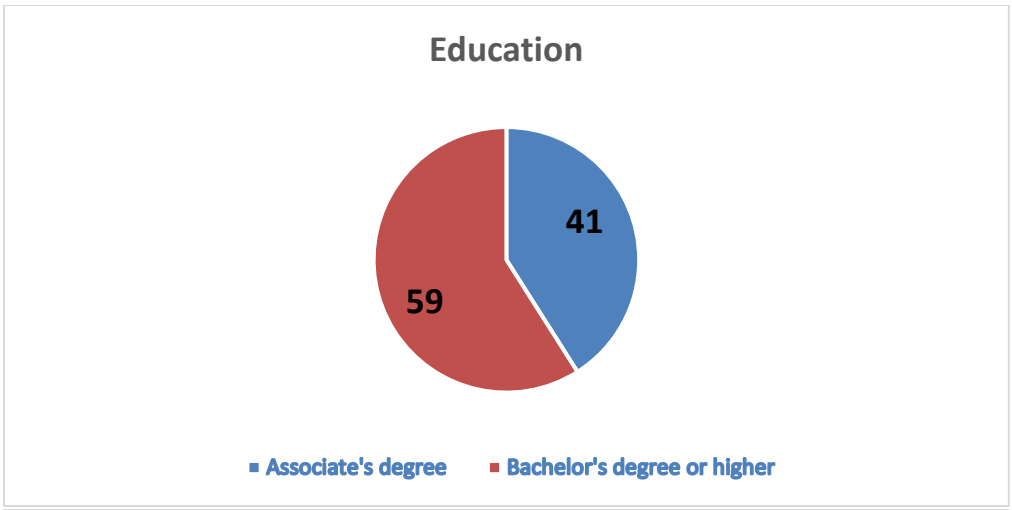
I know how to:					
1. Contact a librarian for help	Strongly Disagree 1	2	3	4	Strongly Agree 5
2. Find resources for evidence-based practice from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc.	Strongly Disagree 1	2	3	4	Strongly Agree 5
3. Perform targeted literature searches using search terms and subject headings.	Strongly Disagree 1	2	3	4	Strongly Agree 5
4. Evaluate quality of research articles.	Strongly Disagree 1	2	3	4	Strongly Agree 5
5. Get evidence-based answers to my clinical questions.	Strongly Disagree 1	2	3	4	Strongly Agree 5

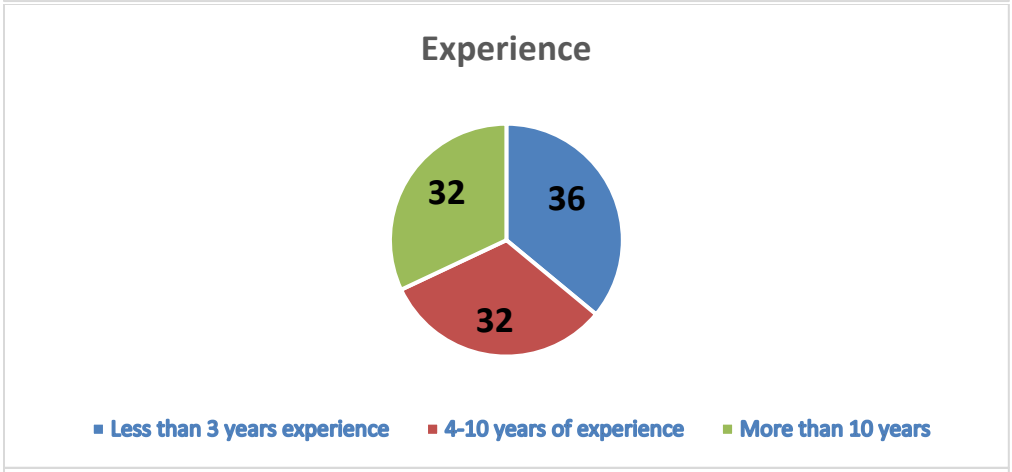
Please circle your answer from 0-3 below:

In the past 3 months, how often have you:	0 = None	1 = Once,	2 = Twice,	3 = 3 or more
6. Contacted a librarian for help	0	1	2	3
7. Found resources for evidence-based practice from research databases such as CINAHL, MEDLINE, Nursing Reference Center, Up to Date, Lexicomp, etc.	0	1	2	3
8. Performed targeted literature searches using search terms and subject headings.	0	1	2	3
9. Evaluated quality of research articles.	0	1	2	3
10. Gotten evidence-based answers to my clinical questions.	0	1	2	3

APPENDIX D

EDUCATIONAL BACKGROUND

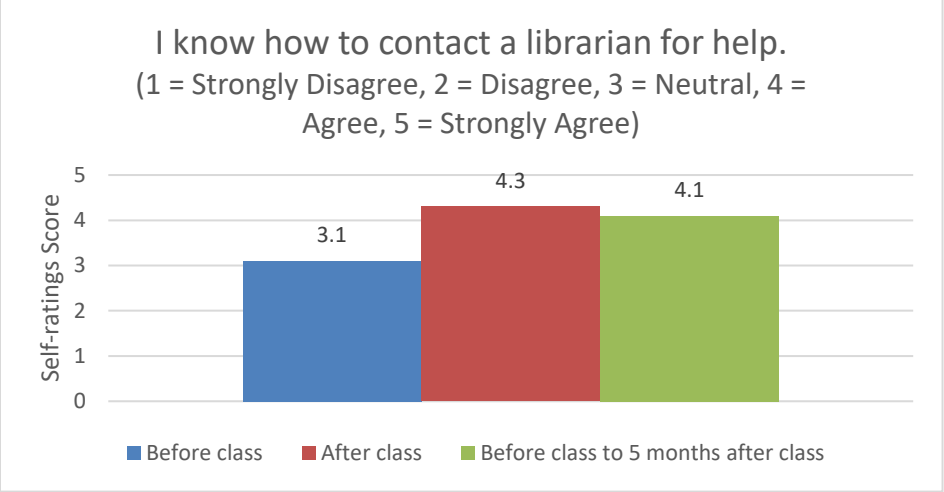

Education
41
59
Associate's degree
Bachelor's degree or higher

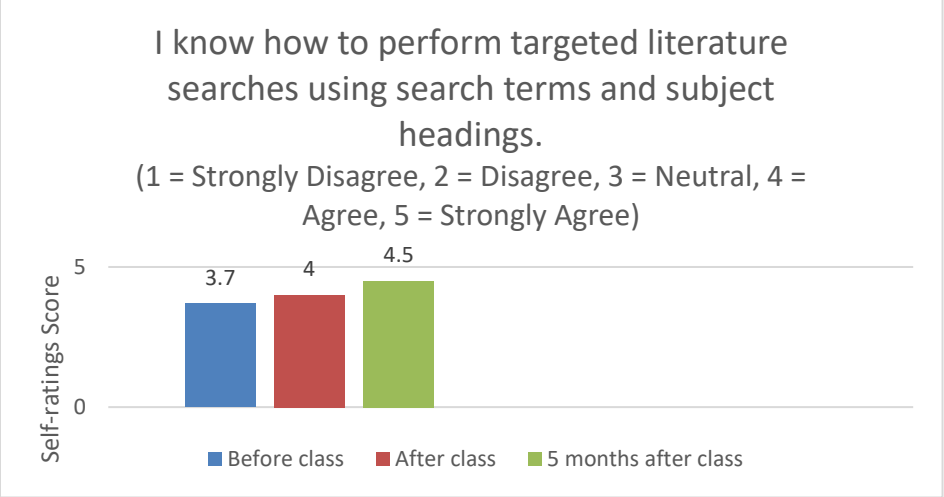

Experience
32
36
32
Less than 3 years experience
4-10 years of experience
More than 10 years

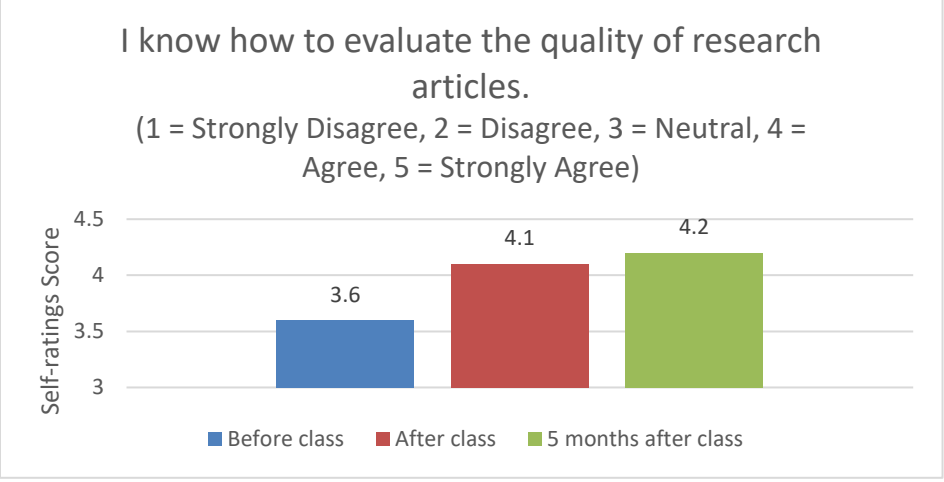

Professional Certifications
50
50
Obtained one or more certifications
No Professional Certifications

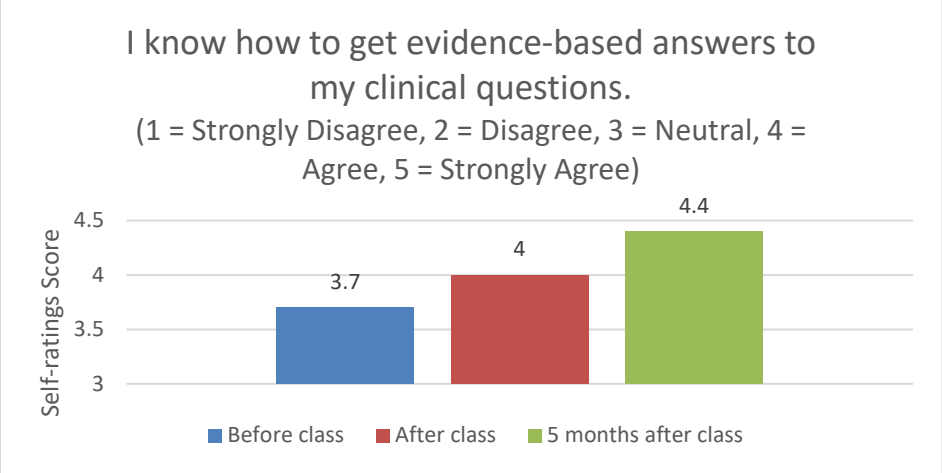
APPENDIX E

KNOWLEDGE AND ABILITY RESULTS


I know how to contact a librarian for help.
(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
Self-ratings Score
5
4
3
2
1
0
3.1
4.3
4.1
Before class
After class
Before class to 5 months after class

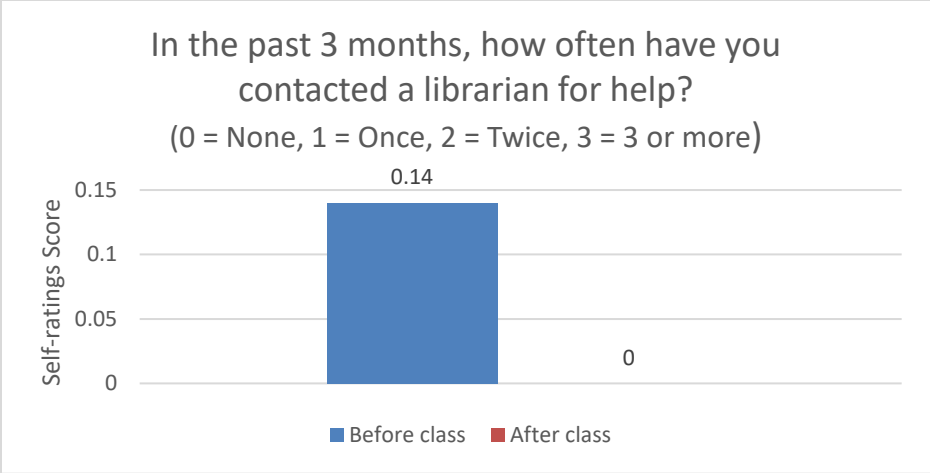

I know how to perform targeted literature searches using search terms and subject headings.
(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
Self-ratings Score
5
0
3.7
4
4.5
Before class
After class
5 months after class

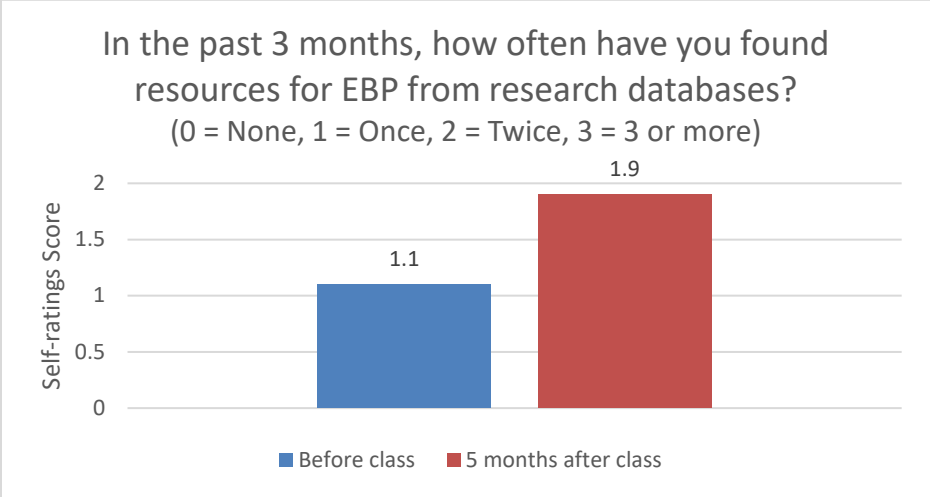

I know how to evaluate the quality of research articles.
(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
Self-ratings Score
4.5
4
3.5
3
3.6
4.1
4.2
Before class
After class
5 months after class

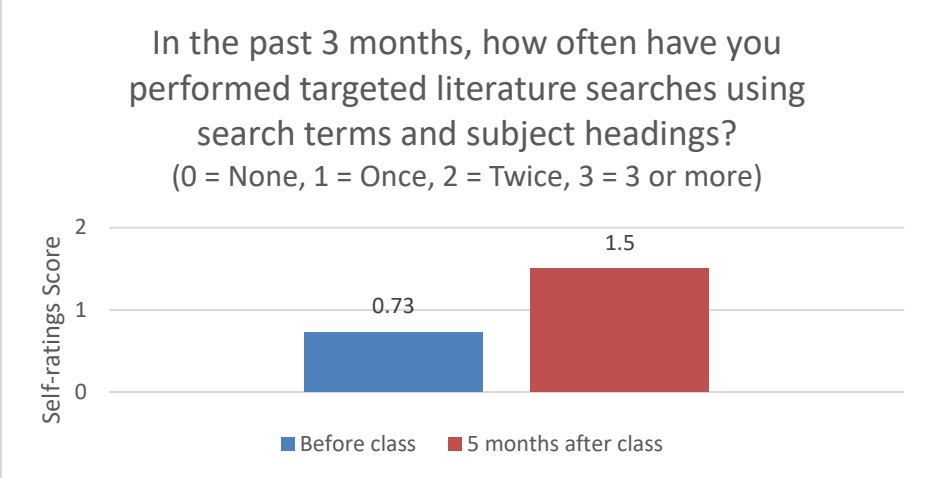

I know how to get evidence-based answers to my clinical questions.
(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)
Self-ratings Score
4.5
4
3.5
3
3.7
4
4.4
Before class
After class
5 months after class

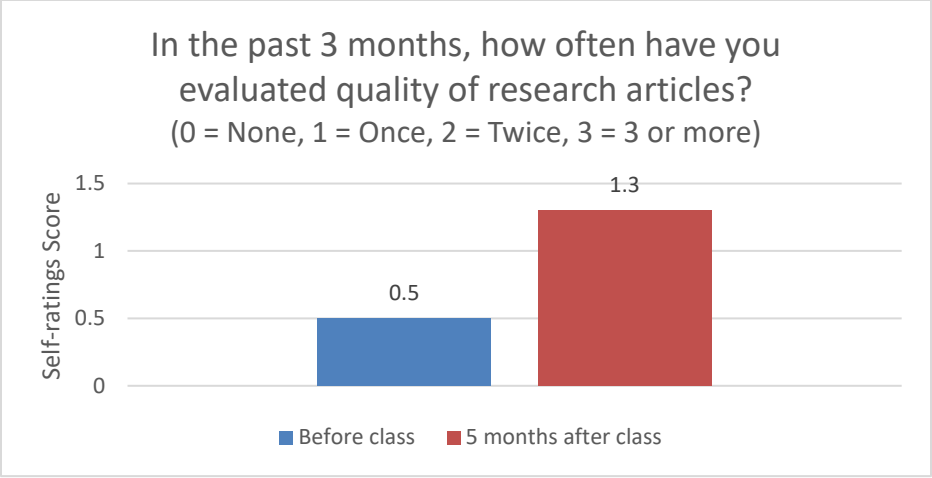
APPENDIX F

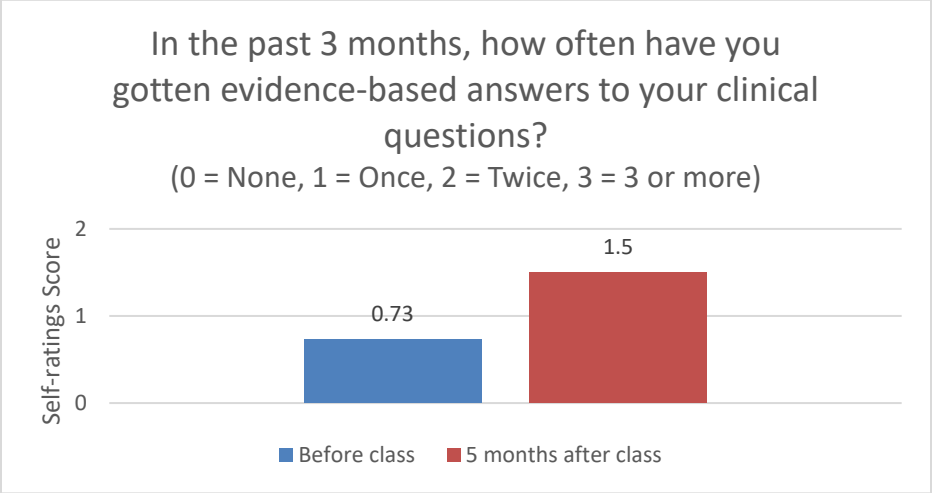
FREQUENCY RESULTS


In the past 3 months, how often have you contacted a librarian for help?
(0 = None, 1 = Once, 2 = Twice, 3 = 3 or more)
Self-ratings Score
0.15
0.1
0.05
0
0.14
0
Before class
After class


In the past 3 months, how often have you found resources for EBP from research databases?
(0 = None, 1 = Once, 2 = Twice, 3 = 3 or more)
Self-ratings Score
2
1.5
1
0.5
0
1.1
1.9
Before class
5 months after class


In the past 3 months, how often have you performed targeted literature searches using search terms and subject headings?
(0 = None, 1 = Once, 2 = Twice, 3 = 3 or more)
Self-ratings Score
2
1
0
0.73
1.5
Before class
5 months after class


In the past 3 months, how often have you evaluated quality of research articles?
(0 = None, 1 = Once, 2 = Twice, 3 = 3 or more)
Self-ratings Score
1.5
1
0.5
0
0.5
1.3
Before class
5 months after class


In the past 3 months, how often have you gotten evidence-based answers to your clinical questions?
(0 = None, 1 = Once, 2 = Twice, 3 = 3 or more)
Self-ratings Score
2
1
0
0.73
1.5
Before class
5 months after class

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BIOGRAPHICAL INFORMATION

Phyllis Mae Helms graduated from the University of Texas at Arlington (UTA) with an Honors Bachelor of Science in Nursing and a minor in Psychology. Ms. Helms has held a Massage Therapist license in the State of Texas since 2006, and has obtained certifications in Neuromuscular Therapy, Lymphatic Drainage, Reflexology, and Craniosacral Therapy.

Ms. Helms is active in the community by volunteering her time to help women in labor by providing Birth Doula services, volunteering to help homeless children during summer camps, and serving in the Health Psychology Research Lab at UTA. After graduation, she hopes to obtain her license as a Registered Nurse in the State of Texas, continue her work with women and children, and continue to participate in research projects involving nursing, health, and psychology. Ms. Helms plans to further her education by pursuing a Master's degree in Nursing.