analysis

**Additional item in 15 studies from non-English-speaking countries

Congruence of the Organization’s Strategic Plan to Project

This project fit smoothly with the Magnet® hospital’s strategic goals. The hospital describes themselves this way “We are an organization of caregivers who aspire to consistently high standards of quality and cost-effectiveness (XXXX, 2013). We seek to improve the health of the communities we serve by delivering a broad range of services with sensitivity to the individual needs of our patients and their families. The quality of our services is enhanced through their integration with education and research in an environment that encourages excellence of practice, critical inquiry, and learning” (XXXX, 2013).

This project integrated education, research and practice by identifying barriers to the utilization of nursing research at the bedside. As stated previously, it has been documented that research utilization at the point of care positively impacts quality patient and organizational outcomes (Robert Wood Johnson Foundation, 2010).

The facility’s strategic plan has three goals that guide the organization:

- To Provide the Best Patient Experience from the Patient's Perspective;
- To Recruit, Develop and Retain the Best People who Share the Organization's Values and Achieve Results;
BARRIERS TO RESEARCH UTILIZATION

In order for these goals to be met, quality patient outcomes, satisfied patients, and skilled employees (nurses in this context) have to be in place. The goals of this project coincided with the guiding strategic principles of the organization.

Translational Research Project Objectives

Nurses of all educationally prepared backgrounds and varied clinical experiences are struggling with implementing bedside nursing research and evidence based practice concepts on a large scale. The capstone project epitomizes translating research into practice application.

Specific aims.

- Specific Aim I: Assess current barriers to research utilization in a Magnet® hospital.
- Specific Aim II: Identify relationships between demographic characteristics and BARRIERS® to research utilization scores.

Research questions.

- What barriers exist to nursing research utilization in the Magnet® hospital?
- Does holding a nationally recognized nursing certification have any impact on the direct-care nurses BARRIERS® scores?
- Are there “pockets” or service lines that are more likely to utilize nursing research at the bedside than others?
- Does time since last research course impact the direct-care registered nurses scores on the BARRIERS® scale?
Project Design

Evidence Based Project Plan

**Project design.** A non-experimental descriptive survey design was used. Participants completed an electronic survey regarding barriers to research utilization and demographics information. Participative convenience sampling was used to recruit participants (see data collection). Stakeholders (nursing research council) completed an electronic survey to evaluate the project for usefulness to the organization and the profession of nursing.

Ethical Considerations

**Protection of human subjects.** The proposal was presented and approved by the Georgia College & State University Institutional Review Board (IRB) (Appendix E), the Magnet® hospital’s Nursing Research Council (Appendix J) and IRB. The researcher outlined the study in full detail to participants during the entire process of survey completion. Electronic informed consent, ethical responsibilities of the researcher, and the rights of participants are part of the electronic survey. Ethnicity and gender are not included as inclusion and exclusion criterion since no statistically significant BARRIERS® correlated in previous studies identified in literature review. It also assisted in preventing risk of identification information of the participant data.

**Protection against risks and confidentiality.** Participants were assured of confidentiality in storing and reporting of research results, time commitment, and benefits prior to consent. Only the research teams had access to the data. No participant identifying information was recorded on data collection forms. A
protected web server minimized the risk of data compromise when delivering the electronic survey. The web server utilized many different types of software to protect the end user from viral and hacker attacks.

Participants were able to withdraw from the study at any time. No members of the research team were involved in the delivery of care or in a supervisory role over study participants during the course of the project.

Population and sample. Previous studies using the BARRIERS® tool to assess registered nurses perception of barriers to research utilization included an average sample size of 150-200 nurses. Larger studies (n=>1,000) and smaller (n=25) have been reported in the literature. For the purposes of this project, target samples (n) of at least 150 nurses meeting inclusion criteria were recruited via convenience sampling (discussed in study design). This accounted for almost 16% of the registered nurses in the organization. Currently, the Magnet® hospital reports 1,200 direct-care nurses. Participants meeting the inclusion criteria and providing informed consent were given the definition of research utilization and then completed the demographics data and the BARRIERS® to research utilization scale via a Survey Monkey® electronic survey based on convenience sampling techniques.

Participants in the study were registered nurses employed at a Magnet® hospital whose work schedule responsibilities included at least 50% percent or more per week as direct patient caregivers in the hospital proper. For example, a nurse who works 24 hours per week was included if the nurse provided direct patient care at least 12 hours in the week. Nurses who were full-time and part-
time from all ethnic origins, genders, and between the ages of 18 and 99 met 
eligibility for the project. The study required that the nurses who participated 
must be able to read, write, and understand English. Finally, all levels of 
registered nursing preparation (Bachelor’s degree, diploma, ADN/ASN, Masters, 
EdD/DNP/PhD) were included.

The hospital reported the breakdown of direct-care registered nurses in 
2012 as 0.6% diploma, 46.30% associates’ degree, 50.90% bachelor degree, and 
2.10% masters prepared nurses. They reported 21.5% of their nurses holding 
national nursing certification. The sample was analyzed after collection to see 
how closely representative of the demographics it reflected (see data analysis and 
discussion sections).

The setting was a 637-bed full service, acute care Magnet® hospital that 
serves an estimated population of 750,000 residents in central and south Georgia 
and is the second largest hospital in the state of Georgia (XXXX, 2013). No 
ancillary or outlying facility or service line nursing areas were included in the 
sample. Only nurses meeting inclusion criteria working in the main hospital were 
included.

Exclusion criteria. Registered nurses excluded from the study if more 
than 50% percent of their work responsibilities did not include direct bedside 
patient care activities (e.g., full time educators, researchers, managers, 
consultants). Nurses met exclusion criteria if prepared as licensed practical nurses 
or licensed vocational nurses as their terminal degrees. The aims of the study and 
the ANCC Magnet® program guidelines to assess registered nurses’ perceptions
of barriers to research utilization in their practice determined the exclusion
criteria.

Instruments

Copies of all instruments and scoring guides are included in the Appendices (C, F, G, H, I). The following items are included: BARRIERS® tool and scoring guide, BARRIERS® Study Eligibility Screen and Demographic Data Tool, and stakeholder evaluations.

The BARRIERS® Instrument

The BARRIERS® to Research Utilization Scale (BARRIERS® Scale) was developed by Dr. Funk and colleagues in 1987 to assess the perceptions of barriers to utilization of research findings into practice by direct-care nurses, nursing faculty, and nursing administrators (Funk et al., 1991). The scale consists of 29 four-point Likert style items and assesses four main components or domains:

- characteristics of the adopter (refer to the nurse’s research values, skills, and awareness),
- characterizations of the organization (include settings, barriers, and limitations),
- characteristics of the innovation (refer to the qualities of the research),
- and characteristics of the communication (the presentation and accessibility of the research) (Funk et al., 1995; Funk et al., 1991, p. 397).
These domains and questions were derived from the literature, research data, and the Conduct and Utilization of Research in Nursing (CURN) Project, Research Utilization Questionnaire (RUQ) by Crane, Pelz and Horsley in 1977 (Funk et al., 1995; Funk et al., 1991).

Since the BARRIERS® scale was first published in the early 1990s, more than thirty national and international studies have been conducted (Atkinson et al., 2008, p. 2). Studies conducted in varied settings include academic medical centers, community hospitals, and at least one Magnet® facility. Systematic reviews of the BARRIERS® scale analyzed sixty-three studies. Overall, identified barriers were consistent over time and across geographic locations, despite varying sample size, response rate, study setting, and assessment of study quality (Kajermo et al., 2010, p. 32). Funk, et al.(1991) used factor analysis to establish internal reliability of the instrument and the Cronbach’s alpha coefficient for the four factors on the scale are 0.65-0.80 respective to the four domains (Funk et al., 1991). Content validity was established using a second measure of research utilization and feedback from experts in the field (Funk et al., 1991).

The BARRIERS® instrument (including content and item internal consistency) has been replicated in many studies. Karkos and Peters (2006) used the tool to determine the barriers to nursing research in a Magnet® facility and Fink, Thompson, and Bonnes (2005) used it to promote the use of research into practice. Indeed, the original scale was developed using Rogers’s theory of diffusion.
The data were collected using ordinal scales. The Likert responses score from one to five with “to no extent” and “no opinion” rankings. The “no opinion” responses score at zero and do not contribute to the score total or mean for the subscales or the instrument.

**Demographics Instrument**

The BARRIERS® Study Eligibility Screen and Demographic Data Tool is an electronic questionnaire evaluating:

- age in years;
- educational level diploma, ASN, ADN, BSN, masters degree, doctorate of nursing practice, EdD or PhD;
- years since last research course (if any) in years,
- nursing as first career yes/no;
- national certification yes/no and list specific certification held;
- gender;
- full time, part time, or contract;
- and service line that best describes their primary work assignment.

The questionnaire formed the beginning of the electronic survey after informed consent and inclusion/exclusion criteria responses. The response choices included both a multiple choice and manual “type in” box for entries requiring personalized responses (type of certification).

**Data Collection**

An overview of the time line for data collection is provided in Table 4.
Data collection was electronic through Survey Monkey® and concluded May 31, 2013 (Appendix D). Participants were notified in advance of opportunities to participate in the study by nursing and hospital websites and newsletters. Advertising and recruitment began with announcements in the facility’s newsletters and websites. Specially labeled bottled of water were given out during nurse week advertising the study and how to participate. Emails were sent to all employed direct-care nurses asking for participation, consent, definitions, demographics, and survey via an embedded hyperlink to the electronic survey. Recruiting for nurses into the study occurred in the hospital.
BARRIERS TO RESEARCH UTILIZATION

cafeteria, break rooms, staff meetings, and one to one encounters. Additionally, nurses were recruited at the facility’s nurse week activities, including events honoring certified nurses.

The eligibility criteria questionnaire is included in Appendix D. After the nurse completed the informed consent, the survey prompted the respondent on the eligibility screening questions (RN, employed at Magnet® hospital, etc). If the respondent met criteria, the survey allowed them to proceed through the demographics and survey sections. After completing the survey, they were thanked for participating in the study and were advised that the results of the study will be discussed in upcoming poster and podium presentations. Additionally, nurses not meeting criteria were thanked for their interest and invited to keep abreast of the study results. A small gift token of a food snack and a research project water bottle were given to the participants after completion of the survey, (even if they did not meet eligibility criteria but participated in the screening for eligibility) (see Appendix K for photo of water bottle and advertising and recruitment highlights). A detailed description if the resources and budget for the project is discussed in Appendix O.

Internal Validity

The researcher and her assistant (who also completed the protection of human subjects training) recruited the nurses, collected the data, and assisted with data analysis into the statistical database. Threats to internal validity include the convenience type of sampling used in this study. In order to minimize this threat,
all registered nurses currently practicing in the hospital at the time of the study were invited to complete the eligibility survey.

**Overall Project Data Analysis**

Data was analyzed with descriptive and inferential statistics using Statistical Package for the Social Sciences (SPSS) for Windows Release 20.0 (IBM, 2013). Analysis began with an examination of missing data and standard data cleaning. Issues with the data or the data collection techniques highlighted the exploratory analysis. Merging of variable data (service line, certifications) were done to optimize category analysis and the process is described in the research question or sample characteristic section appropriate. Interval/ratio level data were examined for normal distributions and measurements of central tendency and descriptive statistics were used to determine the demographics of the sample.

The reliability of the instruments were determined using statistical methods. All discrepancies were reconciled to actual participant data. Examination of all continuous variables were conducted to determine distribution using descriptive statistics for central tendency and Fischer’s exact for skewness and kurtosis as well as histogram charts. Table 5 breaks down the variables, statistical testing used for analysis and the distribution associated with the results.
Table 5

*Breakdown of Statistical Tests for Data Analysis*

<table>
<thead>
<tr>
<th>Test</th>
<th>Variable Measured/Analyzed</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent t test</td>
<td>Gender: Nominal</td>
<td>1 Male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Female</td>
</tr>
<tr>
<td>Pearson Product</td>
<td>Dichotomy</td>
<td></td>
</tr>
<tr>
<td>Correlation</td>
<td>Age: Interval Ratio</td>
<td></td>
</tr>
<tr>
<td>ANOVA</td>
<td>Employment status: Nominal</td>
<td>1 Full time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Part time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Contract</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Education level: Ordinal</td>
<td>1 Diploma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 ASN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Bachelors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Masters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Doctoral</td>
</tr>
<tr>
<td>Independent t test</td>
<td>RN first career: Dichotomy</td>
<td>1 Yes</td>
</tr>
<tr>
<td>Pearson Product</td>
<td>Years of experience: I/R</td>
<td>2 No</td>
</tr>
<tr>
<td>correlation Spearman</td>
<td>Time since last research course: I/R</td>
<td></td>
</tr>
<tr>
<td>Correlation</td>
<td>Service line: Nominal</td>
<td></td>
</tr>
<tr>
<td>ANOVA</td>
<td>Certification type: nominal</td>
<td></td>
</tr>
<tr>
<td>ANOVA</td>
<td>Factor 1-4 of BARRIERS®: I/R</td>
<td>Normal</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Total Tool: I/R</td>
<td>Normal</td>
</tr>
</tbody>
</table>

The study's instrument response data was examined for missing data.

Missing data for questions primarily occurred for questions requiring the participant to manually type in a response instead of selecting from a dropdown menu of response choices. These questions included age, years of experience, holding national certification and time since last research course.
Demographic Data

Descriptive statistics including frequencies, percentages, means, and standard deviations were performed on all of the demographic variables.

Demographic data are found in Table 6.
Table 6

*Sample Demographics*

<table>
<thead>
<tr>
<th>Sample Population Meeting Inclusion Criteria n=206</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Full time</td>
</tr>
<tr>
<td>Part time</td>
</tr>
<tr>
<td>Contract/flex</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>181</td>
</tr>
<tr>
<td>185</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>%</td>
</tr>
<tr>
<td>12.1</td>
</tr>
<tr>
<td>87.9</td>
</tr>
<tr>
<td>89.8</td>
</tr>
<tr>
<td>7.8</td>
</tr>
<tr>
<td>2.4</td>
</tr>
</tbody>
</table>

**Education level**

<table>
<thead>
<tr>
<th>Diploma</th>
<th>ASN/ADN</th>
<th>Bachelor's degree</th>
<th>Masters</th>
<th>Nursing as first career</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>53</td>
<td>122</td>
<td>27</td>
<td>146</td>
<td></td>
<td>1.9</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>25.7</td>
</tr>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td>59.2</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70.9</td>
</tr>
</tbody>
</table>

**Service line**

<table>
<thead>
<tr>
<th>Adult ICU</th>
<th>Cardiology</th>
<th>Med/surg</th>
<th>Emergency</th>
<th>OR/Procedural</th>
<th>Peds</th>
<th>National certification</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>55</td>
<td>65</td>
<td>21</td>
<td>33</td>
<td>16</td>
<td>72</td>
<td></td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26.7</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31.6</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.8</td>
</tr>
</tbody>
</table>

Mean age 40.38 years (SD 28)
Mean years of experience 14.53 years (SD 10.44)
Mean time since last research course 4.43 years (SD 7.231)

**Sample Characteristics**

The sample consisted of 313 participants who attempted to complete the electronic BARRIERS® survey. Of these, 107 participants did not meet inclusion
criteria questions (n= 41 participants did not spend at least 50% in direct care and others did not continue survey leading to missing data). Two hundred and six participants met inclusion criteria and were included in the survey response data set representing approximately 17% of the overall population of direct-care nurses in the Magnet® facility. From this discussion forward, all sample data will be reflective of those meeting inclusion criteria for data analysis.

The sample meeting inclusion criteria was predominantly female (87.9%), full time (89.8%), with the majority reporting nursing as their first career (72.3%). Identified service lines were dispersed among pediatrics, procedural areas, emergency, medical/surgical areas, cardiology, and intensive care. A high number of participants responded as holding a nationally recognized nursing certification (35%) which is higher than the hospital’s overall 22% reported certified nurses. Nurses certified in ACLS/PALS but not national certification (2.4%) were also included in the demographics description. The mean age of respondents was 40.38 (SD=28), years of experience as a nurse years was 14.53 years (SD=2), and educational level completed was diploma (1.9%), ASN (25.7%), Bachelor’s degree (59.2%), and master’s degree (13.1%). No doctorally prepared nurses responded to this survey.

All but one of the interval ratio demographic variables were normally distributed and statistical analysis strong. The only variable that did not report as a normal distribution in this sample was the time since last research course. Fisher’s exact skewness was 9.64 with kurtosis of 3.50. Only 112 participants reported a time since last research course with the mean time of 4.43 years or less. Almost a
third (29.1%) of the respondents stated that either they had had no research course or it had been less than a year since having one.

**Results of Instrument Analysis**

This section describes the study instruments, reliability in this sample, the mean scores and standard deviations, and procedures for handling missing data. The only instrument used as a continuous variable was the BARRIERS® tool and it was evenly distributed.

The overall reliability statistics for the completed 206 participant data collection in this sample was a Cronbach’s alpha of 0.91 (N=29 items). Scores for factor one (adopter characteristics) was .802 with corresponding literature scores of .80; factor two (organizational factors) was .765 with corresponding literature at .80; factor three scores (innovation) was .784 with corresponding literature scores at .72; and factor four scores (communication) was .711 with corresponding literature of .65. Overall, the instrument’s reliability in this sample was stronger than previous studies. All four factor subscales were normally distributed with appropriate skew and kurtosis scores and corresponding histograms.

**Results of Research Questions**

**Question One**

1) What barriers exist to nursing research utilization in the Magnet® hospital? The results of the statistical analysis of this study showed no statistically significant (p=<.001 or p=<.005) barriers perceived by the sample nurses across
demographic fields. Rank order of the results and mean scores are provided in Table 7.
Table 7

*Mean BARRIERS® Scores by Factor*

- Factor: Adopter mean 2.30 (SD .648)
- Factor: Organization mean 2.81 (SD .57)
- Factor: Innovation mean 2.23 (SD.597)
- Factor: Communication mean 2.50 (SD .546)
- Total scale mean 2.45 (SD .499)

Although none of the mean scores on the four factors of the BARRIERS® scale indicated a moderate or great barrier, to fully assess questions from the tool that may indicate underlying barriers that may need to be addressed to prevent the mean scores from becoming a perceived barrier to research utilization, a tool item analysis was evaluated (Table 8). The tool item analysis lists the factors that correspond to the question (organization, adopter) for information into what category the barriers fall into for those with at least 50% of respondents scoring a moderate or great barrier (score three or four).
Table 8

> or ≥ 50% of the Respondents Perceiving Moderate to Great Barriers

*(Score 3 or 4)*

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Percentage</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Reports/articles are not readily available</td>
<td>103</td>
<td>50</td>
<td>Innovation</td>
</tr>
<tr>
<td>Statistical Analyses are not understandable</td>
<td>116</td>
<td>56.3</td>
<td>Innovation</td>
</tr>
<tr>
<td>Other staff are not supportive of implementation</td>
<td>124</td>
<td>60.2</td>
<td>Organizational</td>
</tr>
<tr>
<td>The amount of research information is overwhelming</td>
<td>124</td>
<td>60.2</td>
<td>[None]</td>
</tr>
<tr>
<td>Physicians will not cooperate with implementation</td>
<td>128</td>
<td>62.1</td>
<td>Organizational</td>
</tr>
<tr>
<td>The nurse is unaware of the research</td>
<td>129</td>
<td>62.6</td>
<td>Adopter</td>
</tr>
<tr>
<td>There is insufficient time on the job to implement new ideas</td>
<td>143</td>
<td>69.4</td>
<td>Organizational</td>
</tr>
<tr>
<td>The nurse does not have time to read research</td>
<td>150</td>
<td>72.8</td>
<td>Organizational</td>
</tr>
<tr>
<td>The nurse does not feel he/she has enough authority to change patient care procedures</td>
<td>165</td>
<td>80.1</td>
<td>Organizational</td>
</tr>
</tbody>
</table>

Table 9 highlights the questions with more than 15% of no opinion responses recorded (as compared with responses of one through four) and its associated factor barrier. The importance of looking at this information helps to assess tool validity and sample/response bias because each response on the BARRIERS® tool allows the respondent to choose “no opinion” as a choice instead of choosing numbers of one to four. If a large number of responses were “no opinion”, sampling questions could arise on whether the respondent felt comfortable answering honestly, whether the participant understood the question, and whether the respondents were entering responses incorrectly. The studies
utilizing the BARRIERS® tool previously have reported larger percentages of questions with no opinion responses than 15%. Most of the studies reporting more than 15% of questions reported the highest number on questions in the organization and innovation factors. In this project, seven questions included more than 15% of no opinion responses (the majority of the factors were in the innovation). Arguments could be made that respondents did not understand the question or simply selected the wrong choice on the tool, but unless a qualitative analysis of why respondents chose these options, conclusions cannot be drawn.
Table 9

*Percentage of Responses >15% No Opinion By Factor*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Communication</th>
<th>Innovation</th>
<th>Organizational</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>The relevant literature is not compiled in one place</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=34</td>
<td>16.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The conclusions drawn from the research are not justified</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=39</td>
<td>18.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The literature reports conflicting results</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=40</td>
<td>19.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration will not allow implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=41</td>
<td>19.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Reports/articles are not published fast enough</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=56</td>
<td>27.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The research has methodological inadequacies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=59</td>
<td>28.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The research has not been replicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=63</td>
<td>30.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The unscored question “The amount of research information is overwhelming” on the tool had a mean score in this sample of 2.73 (SD .881).

Since this question attempts to provide additional insight into scores not reflected elsewhere on the tool (other four factors), a rank order of how the sample answered this question is provided in Table 10.
Table 10

*Respondents Mean Scores to Overwhelm Question*

<table>
<thead>
<tr>
<th></th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PALS/ACLS</td>
<td>2.1849</td>
</tr>
<tr>
<td>RNC</td>
<td>2.4417</td>
</tr>
<tr>
<td>Part time</td>
<td>2.5000</td>
</tr>
<tr>
<td>Nursing as not first career</td>
<td>2.5385</td>
</tr>
<tr>
<td>Cardiology</td>
<td>2.5490</td>
</tr>
<tr>
<td>Masters</td>
<td>2.6538</td>
</tr>
<tr>
<td>Emergency</td>
<td>2.6667</td>
</tr>
<tr>
<td>ASN/ADN</td>
<td>2.6875</td>
</tr>
<tr>
<td>OR/Procedural</td>
<td>2.70</td>
</tr>
<tr>
<td>Peds</td>
<td>2.7151</td>
</tr>
<tr>
<td>Full time</td>
<td>2.7486</td>
</tr>
<tr>
<td>Bachelors</td>
<td>2.7542</td>
</tr>
<tr>
<td>APRN</td>
<td>2.7778</td>
</tr>
<tr>
<td>Med/surg</td>
<td>2.7937</td>
</tr>
<tr>
<td>Nursing as First career</td>
<td>2.8014</td>
</tr>
<tr>
<td>Diploma</td>
<td>3.000</td>
</tr>
<tr>
<td>Adult ICU</td>
<td>3.000</td>
</tr>
</tbody>
</table>

**Future Implications for Translation in Educational Levels**

There is a national effort by the ANCC Magnet® program to implement a bachelor’s of science in nursing (BSN) degree as the entry-level nurse in
hospitals. This emphasis is based on studies that show superior patient outcomes and more utilization of evidence based practice and research at the bedside (American Nurses Credentialing Center, 2013; Robert Wood Johnson Foundation, 2010). With the emphasis to hire all BSNs as entry-level nurses in Magnet® facilities, the issue of having had a research course should be a moot point. This study found no statistical differences in BARRIERS® scores for nurses with Bachelor’s degree or a national certification than non-Bachelor’s prepared or non-certified nurses. Cursory literature review implicates all BSN programs require some form of research course and no real studies are apparent that support that holding a BSN equals research utilization in practice. The implications to educational preparation of nurses in this study are more in the realm of nursing research courses.

**Implications of Findings for Nursing Practice in a Magnet® Facility**

**Magnet® designation.** The emphasis on seeking Magnet® designation from the American Nurses Credentialing Center (ANCC) has served to additionally promote the use of research and evidence-based practice in the clinical setting (American Nurses Credentialing Center, 2013). Several of the criteria for Magnet® designation directly relate to building research capacity. All hospitals having Magnet® designation and those seeking Magnet® designation are required to submit data to the National Database of Nursing Quality Indicators (American Nurses Credentialing Center, 2013). These indicators focus on priority areas of nursing care such as prevention of falls, prevention of skin
breakdown, nursing staffing, and nursing satisfaction and can serve as areas of focus for clinical research projects.

The results from this project show that the Magnet® facility's nurses surveyed do not perceive significant barriers to research utilization. This is consistent with other studies in Magnet® hospitals (American Nurses Credentialing Center, 2013; Karkos & Peters, 2006; Trinkoff et al., 2010). The results show that the facility is indeed providing a research culture and should comply with the ANCC guidelines for research utilization for Magnet® redesignation submission. The BARRIERS® scores indicate that nurses surveyed are consistent despite demographic differences. Melnyk et al. (2012) differentiated a difference in scores between masters and non-masters prepared nurses to research barriers. This study did not confirm these findings.

Despite the changes in the organizational and leadership structure during and prior to the survey, the BARRIERS® scores do not reflect perceptions that the organization prevents them from utilizing research. This finding may implicate the strength of the Magnet® principles in place for a decade in the organization despite the changes in leadership or could simply be an anomaly of perceptions (refer to table 1).

Implications for Future Studies

Future studies need to analyze on a qualitative level why nurses did not translate leadership and patient care delivery system changes with barriers relating to organization factors. Additionally, studies investigating why advanced practice nurses perceived more barriers than other demographic representations in the
survey should be conducted. Theoretically, they are better educationally and practice prepared for research and its utilization in practice.

Implications for CNO and NRC in Magnet® Designated Hospital

Melnyk et al. (2012) assessed the perception of evidence-based practice (EBP) among nurses in the United States. They found that although evidence-based healthcare results in improved patient outcomes and reduced costs, nurses do not consistently implement evidence-based best practices and barriers remain prevalent, including resistance from colleagues, nurse leaders, and managers. The descriptive survey boasts a random sample of 1015 RNs who are members of the American Nurses Association. Differences existed in responses of nurses from Magnet® versus non-Magnet institutions as well as nurses with masters versus nonmaster’s degrees. The authors recommend that nurse leaders and educators provide learning opportunities regarding EBP and facilitate supportive cultures to achieve the Institute of Medicine’s 2020 goal that 90% of clinical decisions be evidence-based. (Melnyk et al., 2012).

In a recent editorial, Dr. Drenkard (executive director of ANCC) provided valuable perspective on the importance of research and the creation of a supportive culture in Magnet® organizations (Drenkard, 2013). Because of the varying education levels of clinicians, levels of exposure to research, understanding, and commitment to research activities vary by care settings, it becomes the key role of the CNO to make these assessments and determine the strategies needed to be implemented within the organization (Drenkard, 2013, p. 246). The editorial further postulates that the CNO must nurture the structures and
processes within the organization in order for the clinicians to become engaged
and successful in research activities.

**Question Two**

2) Does holding a nationally recognized nursing certification have any
impact on the direct-care nurses BARRIERS® scores? The nationally recognized
certified nurses in this study (n=72) were grouped by the following descriptions:
APRN (n=9), RNC (n=41), and Clinical Nurse Leader (CNL) (n=2). Additionally,
those nurses who did not hold one of the above certifications but were certified in
ACLS or PALS (n=5) were considered. Again, based on the ANOVA evaluation
of the BARRIERS® score to the nurses in the study who reported holding
certification, there was no statistical significance found between these
relationships. The total mean score for the BARRIERS® tool was highest for
APRNs (2.6413) closely followed by the RNC group (2.4417). This trend was
consistent between the subscales of the tool as well. This is not consistent with
other studies (Gerrish et al., 2011; Glacken & Chaney, 2004). Data for further
studies to consider for analysis was the ACLS/PALS respondents who
consistently held lower barrier scores on the tool across all four subscale (2.18
total mean score).

While the mean scores for certified nurses were not statistically significant
for perceived barriers to research utilization in this project, the nurses with
advanced degrees and certifications held the highest mean scores. It would be
logical for those without advanced degrees (and access to advanced research
courses) to score higher barrier perceptions. Indeed, other studies validate this point (Gerrish et al., 2011).

Implications for Certification and Practice

While there are articles and reports that identify the importance and need for nursing research in practice, there is paucity of literature that actually gives percentages of how many hospital nurses utilize or do not utilize research in practice. Consequently, there is no actual data to determine or define utilization or underutilization of nursing research in practice.

The essence of the problem then becomes how to reduce barriers for direct-care nurses to utilizing research in their practice. Assessment of the nurses’ perceptions of the existing barriers is the easiest way to determine which improvement activities needed to reduce these barriers within the organization.

There are a number of studies over the past 20 years that link certification by nurses to improvement of patient care outcomes, nursing satisfaction, and nursing retention (Blegen, 2012, p. 54; Kendall-Gallagher et al., 2011). The fundamental flaw in applying that literature to the future nursing environment is that many of those studies used nurses who were certified and associate degree prepared. With the newer certification requirements of the last decade moving towards bachelor prepared requirements to be eligible to take certification exams, the association of improved outcomes are no longer clear. There are many established studies that strongly link the bachelor degree in nursing alone (without certification) to improved patient outcomes (American Nurses Credentialing Center, 2013; Robert Wood Johnson Foundation, 2010). The dilemma becomes
which variable is the one responsible to improving outcomes. Alternatively, is it a combination of both?

It is argued by Blegen (2012, p. 55) that the nurses who identify themselves as holding a national certification do not improve patient care outcomes except in a few identified indicators. There were no statistically significant differences between certifications identified in this sample. Interestingly, the nurses who identified as having ACLS/PALS had lower mean scores (although not significant) than those holding national certifications. This sample does not lend itself to the promotion of certification by nurses in a Magnet® designated hospital solely to decrease perceived barriers to research utilization. Now that many certifying bodies already require a BSN to be eligible to sit for their exams, the measurement of BSN versus certification in regards to outcomes may be permanently blurred.

Implications for Future Studies

Future studies should include advanced life support certifications (ACLS/PALS) in direct contrast to national nursing certifications to confirm if there are statistical differences between the different certifications. The advanced life support certifications require nurses to renew with didactic and hands on assessments every two years as opposed to the national nursing certifications that generally require renewal every five years with varying degrees of continuing education, research, and practice requirements. Additionally, the advanced life support certifications are available to other healthcare providers (physicians, pharmacists, respiratory therapists) and are not exclusive to nursing.
Studies that compare the perceptions of BSN prepared certified nurse to
the BSN not certified will need to be conducted to isolate the causative variable
for improved patient outcomes. In today’s healthcare economic uncertainty, it
may be a better use of dollars to fund BSN preparation instead of certification.

Question Three

3) Are there “pockets” or service lines that are more likely to utilize
nursing research at the bedside than others? Service lines in this study were
determined based on data collected from the survey. The respondents described
their area of work in this “type-in” response question. The researcher (familiar
with the nursing units and descriptions in the hospital) grouped the responses into
similar groupings in order to more closely describe the patient population cared
for, the type of nursing required on the unit, or to protect the respondent identity
when small numbers of responders from areas were reported.

The one-way analysis of variables (ANOVA) statistical scores in this
study yielded no statistically significance between any of the identified service
lines and the scores identifying perceived barriers by study respondents.
Interestingly, the adult ICU respondents (n=5) followed by the medical/surgical
areas (n=63) and the emergency room (n=15) had the highest mean barriers to
research utilization scores (3.00, 2.793, and 2.5778 respectively). The
OR/procedural areas (n=23) had the lowest mean barriers score of 2.4354.
Pediatric areas (n=14) had lower mean scores in the subscale barriers of adopter,
organization, innovation, and communication of the research characteristics over
the other service lines participating. Barriers in communication mean scores were
highest in emergency (2.70) and adult ICU (2.68) areas and barriers of the innovation were higher among adult ICU (2.7222) and emergency areas (2.7026). Adopter characteristics mean scores were higher in medical/surgical areas (2.4689) and lowest in cardiology lines (2.1147). The mean score of three or higher on the BARRIERS® scale are the significant signals that the nurses perceive barriers to utilizing research at the bedside.

Traditionally, specialty service lines (pediatrics, intensive care, procedural areas, and cardiology) have received many grants and other funding to conduct research on medical devices, medications, clinical trials, and other topics in healthcare (references). In other studies assessing barriers to research utilization, these specialty areas generally score lower perceived barriers because of their exposure to these research initiatives (Glacken & Chaney, 2004; Hay et al., 2008; Hutchinson & Johnston, 2004; Marshall, West, & Aitken, 2011; McCleary & Brown, 2003). In this project, the intensive care service lines scored higher than general medical areas in perception of research barriers.

When broken down into factors, the medical/surgical areas had higher scores in the adopter characteristics which is consistent with other studies (Parahoo & McCaughan, 2001). This links to a lower number of certified or BSN prepared nurses in these practice areas. However, there were no statistically significant correlations to demographic variables in this project.

Barriers in mean communication and innovation scores were higher in the ER and ICU, reflecting the fast-paced work environment represented by these
areas. Issues with time and space to communicate research findings and journal articles could be responsible for these findings.

**Implications for Future Studies**

Qualitative studies looking at specific physical work environment, workload, and patient acuity in comparison to BARRIERS® scores could potentially illuminate additional barriers to research utilization not previously identified or recognized. Appendix N presents a discussion on the merits of accomplishing these things via a comparative database. Correlational studies identifying education level, years of experience and certification status of nurses scoring higher on the BARRIERS® tool to service line in Magnet® and non Magnet® hospitals would be useful in targeting improvement initiatives (education, funding, mentorship).

**Question Four**

4) Does time since last research course impact the direct-care registered nurses scores on the BARRIERS® scale? Respondents were asked to “type-in” a response question which described the amount of time since their last collegiate research course. Instructions included not to count in services on research and to score zero if they had never had a collegiate research course. The mean response was 4.43 years (n=112) since last collegiate research course. The sample was not normally distributed (s=9.64, K 3.50) with 53.6% (n=60) of respondents reporting no collegiate research course or a “zero” response despite a 59.9% bachelor degree sample response overall.
Spearman’s rho nonparametric correlation was used to analyze the statistics for this question because of its unequal sample distribution. There were no levels of statistical significance (correlation coefficients at \( p < .005 \)) on the BARRIERS® scores either in total or in subscales. The only statistically significant relationship score was with the “years of experience as a registered nurse” variable. There was a negative correlation \( (p = -.002) \) between these variables. The correlation leaves the impression that the more years of experience as a registered nurse, the fewer time (if any) since last research course. It could also reflect that the more years of experience corresponds to no research course taken.

**Implications for Nursing Research Courses**

This project attempted to further investigate variables that affect the direct-care nurse’s research utilization by looking at how long (if ever) since the nurse had a research course and the relationship between bedside research utilization perceptions using the BARRIERS® tool. Studies that identified causation on this deficit generally divide the reasoning for underutilization of nursing research into four main categories: characteristics of the adopter (nurse researcher), characteristics of the organization, characteristics of the innovation (research quality), and characteristics of the communication (Funk et al., 1991; McCloskey, 2008; Pravikoff et al., 2005).

**Implications for Future Studies**

Oliver’s (2011) study found that graduate students do increase their knowledge of nursing research after having taken a graduate nursing research
course but knowledge retention was only measured at least 12 months. No recent studies have looked at whether or not knowledge gained in graduate or undergraduate research collegiate course retention past 12 months. Studies need to be conducted to look at the length of time and nurses who have completed collegiate nursing research courses retain amount of knowledge on research. This data will help Magnet® facilities make educational decisions and timelines for reinforcement of a research knowledge base for their nurses. Since this is not currently the process, Magnet® facilities will need to rethink their education and training strategies for implementing nursing research at the bedside since the ANCC Magnet® model does not include recommendations or requirements for baseline nursing research education or periodic educational updates to provide competency in the area of nursing research (Atkinson et al., 2008; K. Gerrish & Clayton, 2004; Kleinpell, 2008).

An argument based on the scores in this study as they relate to time since research course could be made that an update or refreshing of our collegiate research course designs should be considered. The studies consistently demonstrate that nurses perceive barriers to research utilization to practice in varying degrees and of varying causations. If nursing research courses became less didactic in nature and more hybrids with clinical inquiry in a practice setting, would the utilization of nursing research into practice become more common? Studies and pilot projects to assess and evaluate this idea would benefit the nursing and education communities.
Specific Aim I.

- Assess current barriers to research utilization in a Magnet® hospital.

Evaluation of this aim was measured by the analysis of the BARRIERS® nurses’ survey. The survey scores identified areas that were statistically significant and that nurses identify as barriers to utilizing nursing research. Since there have been no previous assessments at the study hospital regarding nursing research utilization, the results provide a baseline for future projects to use if improvement strategies are implemented to address deficiencies or opportunities for improvement identified in the study.

Specific Aim II.

- Identify relationships between demographic characteristics and BARRIERS® to research utilization scores.

Evaluation of this objective is reflected in the statistical analysis between the BARRIERS® scale scores and their relationship to the demographic questions of the tool. Correlations provided data to the nursing research council and administration to assist in guiding future projects. Based on the findings of the project, a risk assessment of potential patient care opportunities exists for the organization for the areas of nursing research utilization perceptions that scored low. Alternately, areas that scored high on the tool should provide opportunities to celebrate successful initiatives and provide role models or learning opportunities for other areas surveyed.
Additional evaluation methods included an electronic Survey Monkey® survey evaluation form completed by the Chief Nursing Officer (CNO) at the Magnet® hospital and the members of the nursing research council (NRC). The evaluation form included Likert multiple choice responses as well as comment options. (Refer to the evaluation forms in Appendix H and I). Because of organizational leadership changes in the Magnet® facility leading up to and during the project implementation, obtainment of the CNO evaluation became impossible. The CNO left the facility and an interim was appointed while candidates were sought for the permanent position. The six (out of approximately 9-10 who regularly attend) NRC members who completed the evaluations were predominantly positive in their responses (refer to Appendix M).

The responses indicated that the NRC in the Magnet® facility felt that the project benefits the organization, contributes to the profession of nursing, and contributes new knowledge to the organization. The NRC (stakeholders in the project) responses indicate that the members felt the data:

- would be used in the organization,
- their issues or concerns were addressed by the researcher,
- they were kept informed of the progress of the study,
- the study was conducted and presented in a professional manner,
- the study lends itself to be used to foster future research in the organization.
Strengths of Study or Innovation

Primary strengths of the study include the technology used in the electronic survey format allowing for ease of data collection and analysis. The use of portable technological devices like laptops and ipads made data collection mobile and speedy. Many of the younger nurses were extremely familiar with these devices and voiced excitement to the researcher to see research collected this way in the organization. Other nurses voiced appreciation of being able to receive the survey link via email so they could complete at home or at another time and location at their convenience.

The electronic survey tool used to deliver and analyze the data allowed for direct transfer into SPSS® making statistical analysis time expedient and meaningful (see Appendix L and N for more information on these advantages). It allowed the researcher to be able to access and report data back to the organization in a respectable time frame since time did not have to be spent cleaning, assigning, and filtering data from a third spreadsheet option.

Strength of the study includes the researcher’s familiarity with the organization, an active and founding member of the nursing research council (NRC), an active and knowledgeable Magnet® participant in the organization, reputation among nurses within the organization, and passion for the topic.

The statistical scores in the reliability and validity process of data analysis and results make this study a strong study in reporting an accurate assessment to the organization regarding perceived barriers to research utilization and provide implications to many areas in the profession of nursing and the healthcare climate.
Limitations

Limitations to the project range from issues with technology, flaws in study design and external variables. The impacts of the limitations on the study as well as considerations for future studies are discussed.

A convenience sampling of nurses in a relatively short period (one month as compared to studies with longer sampling timelines) is a limitation of this study. A larger limitation to the sampling in the study was the large amount of organizational change and uncertainty present in the organization during the recruitment and data collection period. The CNO, Chief Medical Officer (CMO), and other high-ranking administrators transitioned during this time along with changing the patient care model on every nursing unit. Interestingly, these variables did not reveal inordinately higher organizational related perceptual barriers by respondents. It may have been a more expected response during a time of intense internal organizational change to see higher perceived barriers in the areas of organization or communication. The only area that may have registered this on the scale was on the “no opinion” analysis (see Table 9).

A technical limitation in the study was acknowledged in anecdotal and analysis of the missing response data. Participants attempting to complete the survey on site at recruitment activities reported difficulty with entering data into the “type-in” screens and required assistance from the researcher. Additionally, the areas of demographic responses with the highest missing data were from fields requiring the respondent to type in responses: age, years of service, time since last research course, and service line. There were typing errors (age entered in reverse
order, 12 instead of 21) related to this functionality. Conversely, there were no missing data for questions with a dropdown response menu.

Conclusion

The results of this project validate previous studies stating that Magnet® hospitals have cultures in place to reduce barriers to research utilization in practice. It also validates the need to continue investigating the nuances that keep research from translation into practice. The project demonstrates that while specific demographic variables may not significantly impact barriers, they certainly add information to the body of knowledge. Implications for nursing research councils, research courses, and future studies are demonstrated by the results and discussion of the project.
References


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Appendix A

ANCC's New Magnet Program® Model