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Infusing Evidence-Based Practice into the
Cayman Islands Health Services Authority Nursing Culture

Melissa Ring

A Clinical Research project submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

Doctor of Nursing Practice

School of Nursing

December 2021

FACULTY COMMITTEE:

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Dedication

This project is dedicated to the special people in my life who have supported me over the course of this journey. To Karen, your quiet, supportive, and calm presence meant more than you will ever know. To my family, thank you for understanding my lack of presence at gatherings during this time. To my faithful furry companions, my girls Lola Jean and Gracie Jane, for those amazing and supportive purrs. Keith, you wanted so desperately to witness this graduation. It didn't happen before your physical body left us. Yet, I feel the presence of you and Cheryl. I know you are both with me.

Acknowledgments

To Dr. Corey, it was you who facilitated the practicum work that led to the evolution of this project. Thank you for your guidance and encouragement. To Dr. Gross, thank you for the opportunity to work with you these past five semesters; to share my knowledge with, and to learn from, an international health care system. I am so grateful. To the staff at HSA, even though remote, your participation and feedback was greatly appreciated.

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Abstract

Background: James Madison University and Cayman Islands Health Services Authority (HSA) entered into a collaborative agreement the summer of 2020. There was a lack of organizational structure surrounding implementation and systemization of evidence-based practice (EBP) models and a disconnect between nurse manager knowledge and EBP implementation within HSA.

Methods: The population for this evidence-based project was 21 HSA nurse managers from the inpatient setting. Pre-intervention survey results informed organizational readiness, nurse manager knowledge and ability to implement, and guided the intervention that included the creation and implementation of a website toolkit for EBP. An EBP model was selected for nursing. Post intervention survey results assessed intervention impact.

Interventions: The Johns Hopkins EBP Model was adopted for use at the Cayman HSA hospital. A virtual EBP educational session to Cayman nurse managers via Zoom (live) was presented and recorded, to allow for asynchronous participation in the intervention. Educational content included review of the EBP process, overview of the Johns Hopkins EBP model and introduction on how to use the model in practice, and a virtual tour of the newly developed CIHSA-JMU EBP website toolkit.

Results: Pre-intervention survey, using the Implementation Climate Scale (ICS) for nursing and Nurse Manager EBP Competency (NM-EBC) Scale, response rate was 38%. Post intervention survey, using the NM-EBC Scale, response rate was 14%. Serving as an organizational needs assessment, ICS for nursing results revealed the lowest scored area in staff rewards and compensation for EBP use. Two participants completed pre and post

intervention surveys which allowed for comparison of the intervention's impact. NM-EBC scale mean results remained the same pre and post intervention, with EBP knowledge rating slightly higher than EBP activity.

Conclusions: Pre and post intervention nurse manager self-assessment of knowledge and ability to implement EBP was strong, yet incongruent with leadership assessment. Low participation rates limited evaluation of intervention impact. Future projects with HSA should focus on creative and innovative strategies to facilitate staff engagement and participation. This project supported the HSA-JMU collaborative, a springboard for legacy projects. The newly developed EBP website toolkit offers nursing staff online resources to support EBP implementation and use.

Keywords: Evidence Based Practice (EBP), Nurse Managers, Organizational Climate, Readiness, Knowledge, Ability, Website Toolkit

Introduction

In *Crossing the Quality Chasm: A New Health System for the 21st Century*, the Institute of Medicine (IOM) identified guidelines for the implementation of evidence-based practice (EBP) to support high quality patient care. While nurse leaders support the use of EBP, it is not always an organizational priority (Melnyk et al., 2016). Worldwide, nursing leadership is critical in the facilitation of EBP implementation in healthcare organizations, yet gaps exist regarding designated EBP models and their use (Speroni et al., 2020).

James Madison University entered into a collaborative agreement with Cayman Islands Health Services Authority (HSA) in the summer of 2020. HSA is in the process of seeking initial Joint Commission International (JCI) accreditation. Implementing EBP is critical in successfully achieving HSA's goal of becoming JCI accredited and simply improving patient care. Stimulating this spirit of inquiry will lead to the infusion of EBP concepts into leadership and clinical practices within HSA. This project served to facilitate the JMU-HSA collaboration and to assist HSA in attaining its goal.

Background

There was a lack of HSA organizational structure surrounding implementation and systemization of EBP models and a disconnect between nurse manager knowledge and implementation. EBP educational sessions and quality initiatives lacked nurse manager attendance, participation, and engagement. The Institute of Medicine (IOM) identified guidelines for the implementation of evidence-based practice (EBP) to support high quality patient care in *Crossing the Quality Chasm: A New Health System for the 21st Century*. According to Melnyk (2019), with the use of EBP, healthcare's quadruple aim of quality enhancement, improved patient outcomes, cost reduction, and clinician empowerment is achieved.

The ability to improve nurse manager knowledge and implement an EBP model is critical to achieving quality patient care and organizational outcomes within HSA, which includes successfully achieving JCI accreditation. Successful execution of this project provided an initial intervention, that with continued attention, will result in an impactful, sustainable solution to EBP while accomplishing an HSA goal. This project served to facilitate the HSA-JMU collaborative.

Problem Statement

There was no organizational data within HSA to quantify problems and opportunities, only anecdotal report. HSA nurse executives identified that nurse managers did not regularly practice or promote EBP on their respective units. EBP educational sessions and quality initiatives had not been well attended by nurse managers. HSA did not utilize an EBP model and lacked structure and process regarding EBP implementation, nor was there clear ongoing use of EBP in performance improvement processes. Without nurse manager understanding and utilization of EBP, patient and organizational outcomes would continue to be negatively impacted. Because an EBP model had not yet been identified for use at HSA, there was an opportunity to investigate and choose the EBP model that best fit the culture and needs.

Review of the Literature

An online literature search of CINAHL using the search terms “nurse manager” and “knowledge” and “evidence-based practice implementation” yielded a result of 58 articles. When the date span was updated from a begin date of 1999 to 2010 to current, and articles only in English language, the search yielded 53 results. An earlier search of PubMed and CINAHL revealed similar results. Further narrowing of search terms to “nurse manager” and “EBP” and “use” revealed 14 results, with 4 articles not included in the previous search result.

Key messages were extracted from the literature review. A message that was highlighted was while nurse leaders support the use of EBP, it is not always an organizational priority (Melnyk et al, 2016). Another consistent message was that worldwide, nursing leadership is critical in the implementation of EBP, yet gaps exist regarding structure, designated EBP models, and use (Speroni et al, 2020).

Organizational support is necessary to foster nurse manager EBP competency (Chen et al., 2020). Along with their operational duties, nurse managers have an impact on sustaining EBP use on their units by incorporating vision, approaches, and actions with unit performance (Fleischer et al., 2015). Nurse manager leadership styles and behaviors impact EBP implementation and unit climate regarding EBP use (Shuman et al., 2018). Their role is critical in supporting or impeding EBP use.

In addition to organizational support, resources, and education, nurse manager behaviors are critical in the success of EBP implementation and use (Farokhzadian et al., 2015). Managers serve an important role in facilitating the implementation of EBP, which involves knowledge, experience, and the ability to customize EBP tenets to foster interest and engagement (Aasekjaer et al., 2016). Knowledge and experience are crucial. Managers require an awareness of potential EBP obstacles, and they must be prepared with the skill to address and overcome these obstacles (Bianchi et al., 2018). Training and support for nurse managers to increase their EBP ability and skills positively impacts EBP use by their nursing staff (Caramanica & Spiva, 2018).

As indicated from the literature review, critical to the success of EBP use is organizational support, resources, education, and nurse manager engagement and behaviors. Within HSA, organizational structure surrounding implementation and systemization of EBP models within HSA were missing. EBP educational sessions and quality initiatives lacked nurse

manager attendance, participation, and engagement. There was no reward structure for nurses who utilized EBP. No current annual evaluation structure or data existed regarding EBP expectations for use, nor was there a related link to promotions and raises for EBP use.

Considering the lack of organizational structure and nurse manager disconnect, without further intervention, nurse managers would continue to struggle with implementation of EBP and the need to change longstanding familiar care practices. Identification of this need within HSA nursing led to the search for methods and tools for assessing nurse manager knowledge and ability to implement EBP and organizational readiness to support EBP use.

The two scales chosen for use in this project were the Implementation Climate Scale (ICS) for nursing and the Nurse Manager Evidence-Based Practice Competency (NM-EBC) Scale. The NM-EBC Scale and ICS for nursing are brief practical surveys and were an optimal starting point for nurse managers and HSA. Shuman et al (2019) identified the reliability of utilizing these tools, in addition to the Implementation Leadership Scale (ILS) to assess staff nurse and nurse manager and EBP implementation.

Developed originally for the mental health setting, the ICS is a tool that measures climate within an organization toward readiness for EBP implementation (Ehrhart et al., 2014). The ICS for nursing was adapted by the author and contains minor changes to the original ICS wording for nursing context (M. G. Ehrhart, personal communication, February 10, 2021). The NM-EBC Scale assesses the relationship between nurse manager competency and implementation of EBP and is based on the Promoting Action on Research Implementation in Health Services (PARIHS) framework of EBP. (Shuman et al., 2018). Since its inception in 2008, the PARIHS framework has been updated and polished to maintain its robustness and practicality in the execution of innovation (Rycroft-Malone & Bucknall, 2010).

Objectives and Aims

The primary objective of this project was to determine the impact of an educational intervention (website toolkit) on nurse manager knowledge, implementation, and use of EBP. The aims of this project were to:

- assess organizational readiness and climate for EBP and nurse manager understanding, use and ability to implement
- critically appraise and select an EBP model
- design, implement, and evaluate an evidence-based intervention for EBP.

Theoretical Model

Roger's Diffusion of Innovations Theory served as the theoretical framework for this project. New knowledge is introduced and diffused within an organization. Roger's Diffusion of Innovation Theory entails 5 process steps for the distribution of innovative information and ideas:

1. Knowledge occurs with an awareness of an innovation and its function
2. Persuasion occurs through actively seeking information, whether in favor or unfavored
3. Decision occurs through engagement in activity, leading up to a choice to adopt or reject
4. Implementation occurs with considering adopting and putting into practice the innovation
5. Confirmation occurs with evaluation of results of the innovation and determination to use or not to use

This theory is a basis for translating and communicating new ideas and processes into practice and how these innovations are conveyed over time. Personal characteristics impact how early in this process participants will become involved and engaged (White et al, 2019).

Roger's Diffusion of Innovations Theory's elements aptly fit into the roll-out of a clinical EBP model and process at HSA. Implementing EBP is critical in successfully achieving HSA's goal of becoming JCI accredited and improving patient care. Without further intervention, nurse managers will continue to struggle with implementation and the need to change longstanding familiar care practices. Stimulating this spirit of inquiry will lead to the infusion of EBP concepts into leadership and clinical practices within HSA.

Project and Study Design

Organizational culture and climate, nurse manager engagement and initiative, and a quest for an EBP model were addressed as part of this project development, implementation, and evaluation, occurring during the Summer and Fall of 2021.

Setting

The Cayman Islands, a British territory, is a group of islands in the Caribbean Sea, with Grand Cayman the largest and most populated of the islands (Cayman Islands, n.d.). English is the official language, banking and tourism are the major economic supporters, and the Cayman Islands HSA is the chief health care provider system (Cayman Islands, n.d.). HSA services include inpatient and outpatient facilities, public health, and community-based services. The main full-service hospital is located on Grand Cayman Island with 124 beds and Faith Hospital on Cayman Brac is an 18-bed community hospital (HSA, n.d.). HSA has Joint Commission International (JCI) accreditation only for its laboratories and is seeking initial JCI hospital accreditation. According to the JCI website, Health City Cayman Islands, a division of Narayana Health in India, has hospital accreditation and Baptist Health International Cayman Islands, a division of Baptist Health South Florida, has ambulatory accreditation (JCI, n.d.).

Sample Population

Cayman Islands HSA inpatient services was the setting for this project. The sample population was HSA nurse leaders and managers. The sample size was 21, consisting of 14 nurse managers, 5 shift coordinators, the Chief Nursing Officer, and the Senior Nurse Leader. Staff nurses and management staff who were not nurses were excluded from this study.

Methods

Project rollout was initiated August 2021. Question Pro was the platform utilized for pre and post intervention surveys. This was an evidence-based project evaluating the impact of an educational intervention on nurse manager knowledge and implementation of EBP. It included 4 phases (see Figure 1).

Phase I. Pre-intervention survey (Appendix A) deployment via Question Pro consisted of basic demographic data, the Implementation Climate Scale (ICS) for nursing, and the Nurse Manager Evidence-Based Practice Competency (NM-EBC) Scale. Results of this survey guided the selection of an intervention to address the problem of nurse manager knowledge and ability to implement EBP. This work occurred August 2021.

Phase II. In collaboration with the Senior Nurse Leader, EBP models were critically appraised, and the Johns Hopkins Model for Evidence Based Practice for Nursing and Healthcare was chosen for use by nurses within the organization. This work occurred August 2021.

Phase III. Survey results guided the design and implementation of an evidenced based intervention to achieve HSA's organizational goal related to EBP. This work occurred October 2021.

Phase IV. Post intervention survey (Appendix B) deployment via Question Pro to nurse managers consisted of basic demographic data, the NM-EBC Scale, and comment questions.

Final data analysis occurred November 2021.

Study Design

Basic demographic data was obtained from participants in both the pre and post intervention surveys. This demographic data included: gender, highest degree of education, native culture, number of years as a registered nurse, number of years as a nurse manager, and current role.

The ICS for nursing and NM-EBC Scale were both included in the pre-intervention survey. Along with the basic demographic data, the post intervention survey included only the NM-EBC Scale and 2 comment questions regarding the helpfulness of the website EBP toolkit and recommendations for the toolkit. Permission for use of both scales was obtained from the authors. There was no financial cost associated with the use of these scales for this project.

The ICS for nursing (Appendix C) is a validated 18 question survey that utilizes a five-point Likert scale for its six organizational domains. These six organizational domains consist of unit focus on EBP use, educational support for EBP, staff recognition for EBP use, financial rewards for EBP use, staff selection for EBP, staff selection for openness (Ehrhart et al., 2014).

The NM-EBC Scale (Appendix D) is a validated 16 question survey that utilizes a four-point Likert scale in its two sub-scales of knowledge and activity.

Participants were initially provided 2 weeks to complete the pre-intervention survey. At the end of this time, there were only 4 completed surveys. A reminder was then sent to participants by the Senior Nurse Leader via WhatsApp, after which 4 more surveys were completed. WhatsApp is a platform utilized worldwide for instant messaging, voice, and video

calls (WhatsApp, n.d.). There was a total of 12 surveys started with 8 survey completions, which resulted in a 38% response rate.

EBP models were critically appraised, and the Johns Hopkins Model for Evidence Based Practice for Nursing and Healthcare was chosen for use by nurses within the organization. From a thorough literature search, the selection and adoption process for a clinical EBP model was achieved in collaboration with the HSA Senior Nurse Leader. Factors incorporated into the choice of the Johns Hopkins EBP model were that it had an organizational level focus, included useful process-oriented tools, and incorporated measures that evaluated evidence (Dang et al., 2021). This chosen model aligned with the organization's goals and culture.

HSA lacked a readily available online EBP resource for nurses. This led to the development and implementation of the Cayman Islands (CI) HSA-JMU EBP website toolkit. The Senior Nurse Leader established the website domain, www.cihsa-jmu.com. Word Press served as the platform for the website development. While basic in its structure, this EBP website is the initiation of an online resource for staff. It will also serve as a platform for adding future organizational initiatives and project items. The CIHSA-JMU EBP website included an introduction describing the collaborative between HSA and JMU, an overview of the Johns Hopkins EBP model, and EBP resources.

Kueny et al. (2015) identified the positive impact on nurse manager perceptions and efforts to promote EBP when there was a supportive leadership culture, clearly communicated directives, and facilitation of nurse driven EBP initiatives. Pre intervention survey results guided the design and implementation of an evidenced based intervention to achieve HSA's organizational goal related to EBP. This intervention consisted of an initial virtual EBP educational session via Zoom. The recording of this educational session was available for 1 week

post synchronous Zoom. The educational intervention consisted of a review of the EBP process, an overview of the Johns Hopkins EBP model, an introduction on how to use the Johns Hopkins EBP model in practice, and a virtual tour of the newly developed CIHSA-JMU EBP website toolkit.

Post intervention, the survey was again sent electronically to participants' organizational email by the HSA Senior Nurse Leader. Participants were given one week to complete the survey, with a total of 4 surveys started and 3 completed. There was a 14% response rate for completed surveys.

The ICS for nursing was administered pre-intervention to provide a needs assessment surrounding organizational climate and readiness for EBP. Pre and post survey data, consisting of the NM-EBC Scale results was tallied, and compared. Due to the small sample size, data from each survey was entered into an Excel spreadsheet.

Five nurse managers and the Senior Nurse Leader attended the virtual educational session intervention. There was no method in place to capture the number of staff who viewed the session recording. At the end of the session, it was announced that the post intervention survey would be deployed in one week. Upon completion of the survey, participants were directed to message the Senior Nurse Leader via WhatsApp and continuing education credit would be granted by HSA. The Senior Nurse Leader did not receive any messages from participants regarding completion.

Ethical Considerations

HSA ethical approval for this project was achieved April 2021. James Madison University IRB approval was achieved August 2021. Survey participation was confidential and anonymous, with survey consent achieved from survey completion and submission. The project

team received no reimbursement or payment for this project. There was no payment to survey participants. Surveys were sent electronically to participants' organizational email by the HSA Senior Nurse Leader. There was no anticipated risk or harm to participants. No patients were included in this project. All data was kept confidential. Time to complete the surveys was anticipated to take less than 30 minutes. Participants were requested to provide their employee ID number on both surveys as a means to compare pre and post intervention results. ID numbers were not reported in the final form of this project. There was no knowledge of the identity of survey participants by this number. Anticipated benefits of this project included the ability to improve nurse manager knowledge and ability to implement EBP and an identified EBP model.

Analysis

Data from pre and post intervention surveys was used in the analysis for this project. Data was entered into an excel spreadsheet for analysis and comparison. Data included demographic information, results of the ICS for nursing and NM-EBC scale, and survey comments. Initial analysis plan was to utilize a paired t-test to compare pre and post intervention data, with a consideration for use of Cohen's d formula to show effect related to the small sample size. The low participation rate of participants that included their employee ID number on pre and post intervention surveys yielded a sum that was not a useful statistic outside of local context. However, it served as a descriptive estimate, relating to the local context, and created meaningful data for this project.

Demographic Data

Demographic data was included in the pre and post intervention surveys. Demographic data revealed the following information. Pre-intervention, of the 8 survey respondents, the

majority were female, Jamaican, with bachelor's degrees, current role of nurse manager, 20 or more years of experience as a registered nurse and 1 to 4 years as a nurse manager (see Table 1).

Post intervention, of the 3 survey respondents, 2 were female and 1 male. Two had master's degrees and 1 had a bachelor's degree. One reported 1 to 4 years of experience as a nurse manager, with 2 reporting 10 to 14 years of experience. All were currently in the role of nurse manager and had 20 or more years of experience as a registered nurse. Identified native cultures were Caymanian, Jamaican, and other (see Table 2).

Organizational Readiness

The ICS for nursing served as a needs assessment surrounding organizational climate and readiness for EBP. Each of the six sub-scale domains of the ICS for Nursing scale contained 3 related questions. The lowest mean score occurred in the rewards for EBP (0.46). This sub-scale assessed unit focus on the use of financial incentives for EBP, rewards related to EBP use, and compensation opportunities for time utilized for EBP related projects or education. The highest scored domain was selection for openness (2.83). This domain assesses the unit's hiring of nurses who are adaptable, flexible, and open to new practices. It was followed by the unit focus on EBP (2.74). This sub-scale domain assessed the unit's main goals to use EBP effectively, nurses' perception of the importance of EBP implementation, and EBP as a top priority (see Table 3).

EBP Knowledge and Activity

Of the 8 surveys completed pre-intervention and 3 completed post intervention, mean results revealed nurse manager self-assessment of EBP knowledge rated higher than EBP activity both pre and post intervention surveys. Pre-intervention, EBP knowledge was 1.96, EBP activity

was 1.79, and total score was 1.85. Post intervention EBP knowledge was 1.61, EBP activity was 1.47, and total score was 1.52 (see Table 4).

Only 2 participants who entered an employee ID number on the pre-intervention survey also entered their ID number on the post intervention survey. This provided a sum of 2 that could be utilized for pre and post intervention comparison. A sum of two is not a useful statistic outside of local context, as it is not an estimate of the population. However, this information serves as a descriptive estimate, relating to the local context and creating meaning (see Table 5).

NM-EBC results pre and post intervention remained the same in EBP knowledge, activity, and total score. While mean scores remained equal pre and post intervention, this was related to response changes post orientation from survey recipients. For one recipient, responses decreased post intervention to questions 4, 8, 10, and 11 and increased for questions 5, 13, and 16. For the other recipient, response to question 16 decreased post intervention. Questions 4,8, 10, 13, and 16 relate to EBP activity and questions 5 and 11 relate to EBP knowledge.

Participant Comments

The post intervention survey contained a request for feedback from participants regarding the newly developed CISHSA-JMU EBP website. Three comments were received regarding information most helpful on the CIHSA-JMU EBP website. Two comments were received regarding website comments/suggestions. All were positive. (see Figure 2).

Discussion

Pre and post intervention self-assessment of nurse manager knowledge and ability to implement EBP was strong, (meaning participants reported a high level of knowledge and ability to implement EBP) yet these findings were incongruent with leadership assessment. Low participation rates in the pre and post surveys, and in the intervention, limited the ability to assess

the impact of the educational intervention (website toolkit) on nurse manager knowledge, implementation, and use of EBP. Organizational readiness and climate for EBP and nurse manager understanding, use, and ability to implement EBP was explored with no significant opportunities identified. EBP models were critically appraised and the John Hopkins EBP model was selected for use at HSA.

Future projects with HSA should focus on creative and innovative strategies to facilitate staff engagement and participation. To limit burden on HSA staff and potentially increase engagement and participation, it is recommended that JMU faculty and students take into consideration the number of student projects and the timeframes in which they occur in order to prevent survey fatigue and simultaneous implementation.

This work serves as a potential legacy project. It is a springboard to address future organizational wide EBP initiatives. Identification of a Doctor of Nursing Practice student who is interested in building upon this EBP project work will prove helpful in sustaining EBP use within HSA. Finally, formalizing ownership of the CIHSA-JMU EBP website toolkit to secure further development and ongoing updates will serve to sustain this EBP initiative.

Limitations

Limitations of this project were many. There were simultaneous high priority organizational initiatives and limited human, capital, information, and technology resources. HSA is currently seeking initial JCI accreditation as well as implementing Just Culture, and the new graduate Transition to Practice. As part of the HSA-JMU collaborative, multiple student projects were initiated concurrently with possible competing objectives. The impact of the coronavirus pandemic and border closure for an extended period of time, was visible as nurse managers' ability to engage in learning new information that would lead to yet another change

was likely overwhelming. Nurse manager and nursing staff turnover also was also believed to be a factor in gaining interest and participation in the project. Lastly, a small sample size did not support pre and post intervention comparison; therefore, limiting specific findings.

Conclusion

The initial impact of this project was an awareness of EBP and availability of an online resource. This project also resulted in the adoption of the Johns Hopkins EBP Model for HSA nursing. An assessment of organizational readiness and climate for EBP and nurse manager understanding, use, and ability to implement EBP was accomplished. A keen understanding of the virtual execution of an international project in the midst of a pandemic was accomplished. Recruitment and participation were the most challenging entity. While there were opportunities to make a difference in supporting Cayman HSA, it was difficult to establish priorities and inspire interest in the midst of competing organizational priorities. This project provided the opportunity to collaborate with diverse cultures providing healthcare. The long-term impact of this project was that it offered a plan for sustainability. Nurse managers and staff now have access to a designated EBP model, resources, and related tools. The website toolkit can be used as a repository for clinical education and training videos. It can also be utilized as a showcase for EBP projects. The plan for the website toolkit can include expansion beyond EBP to support the HSA-JMU collaborative and future student projects.

Table 1

Table 1. *Pre-Intervention Demographic Data*

Demographic Data			
Pre-Intervention		N=8	%
Gender	Male	3	37.5
	Female	5	62.5
Native Culture	American	2	25
	Caymanian	1	12.5
	Great Britain	1	12.5
	Jamaican	3	37.5
	Latin American	1	12.5
Highest Education	Bachelors	4	50
	Masters	3	37.5
	Doctoral	1	12.5
Current Role	Manager	7	87.5
	Other	1	12.5
Years as Registered Nurse	10 to 14	1	12.5
	20 or more	7	87.5
Years as Nurse Manager	1 to 4	3	37.5
	5 to 9	2	25
	10 to 14	2	25
	15 to 19	1	12.5

Table 2

Table 2. *Post Intervention Demographic Data*

Demographic Data			
Post Intervention		N=3	%
Gender	Male	1	33.3
	Female	2	66.67
Native Culture	Caymanian	1	33.3
	Jamaican	1	33.3
	Other	1	33.3
Highest Education	Bachelor's	1	33.3
	Master's	2	66.67
Current Role	Nurse Manager	3	100
Years as a Registered Nurse	20 or more	3	100
Years as a Nurse Manager	1 to 4	1	33.3
	10 to 14	2	66.67

Table 3

Table 3. *ICS for Nursing Results*

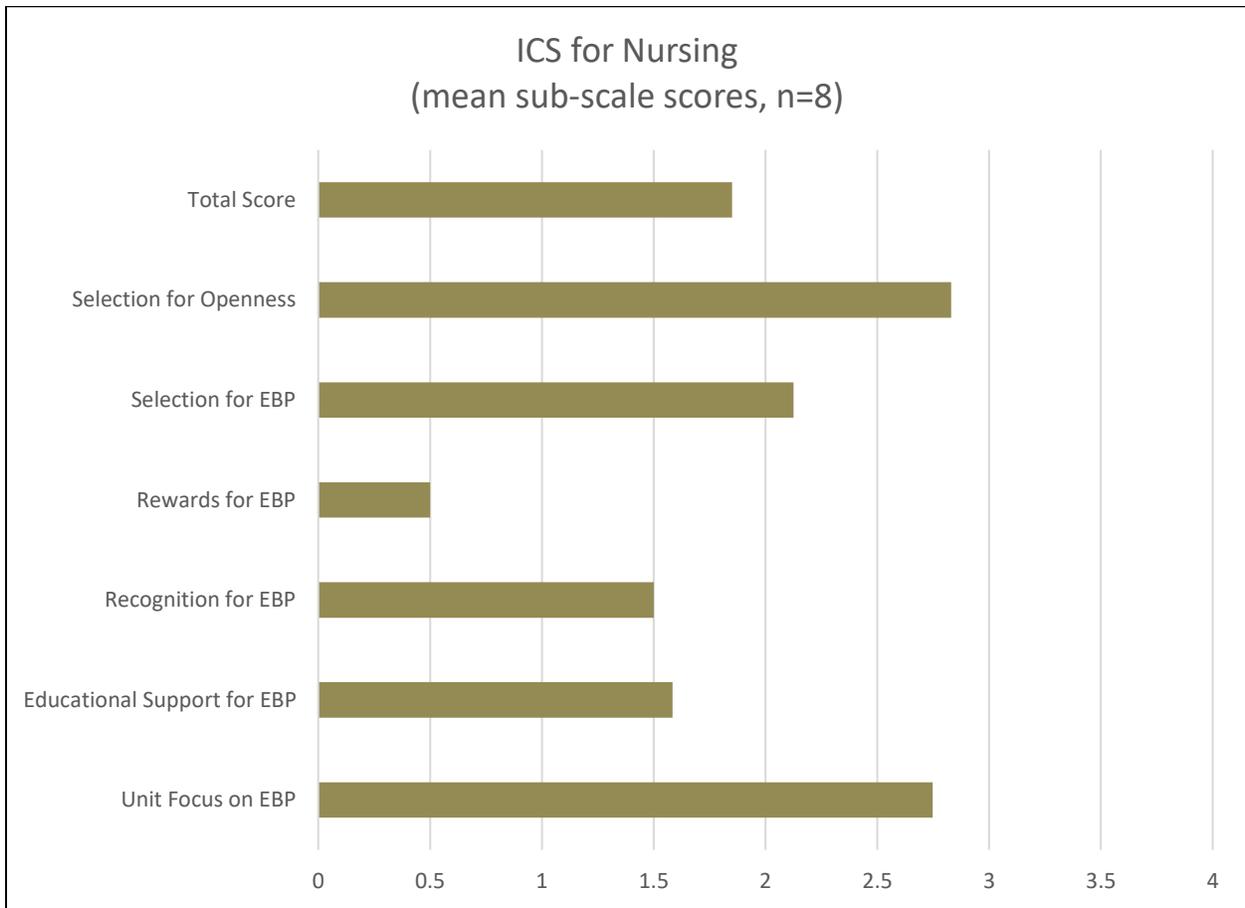
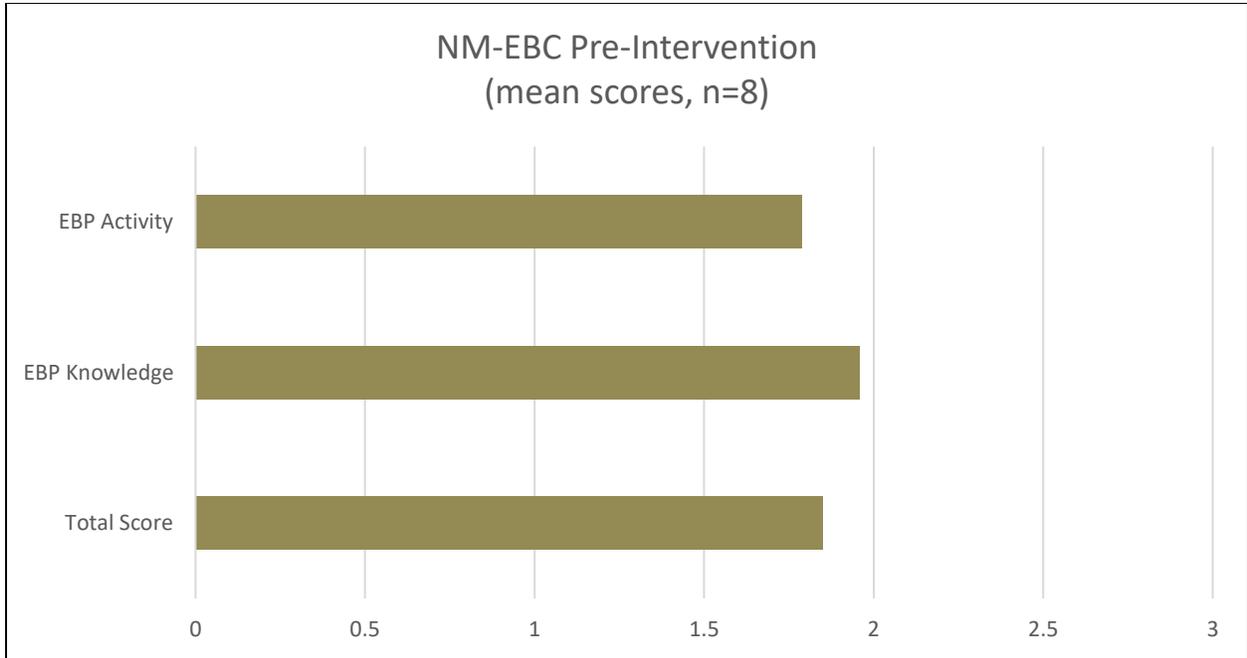


Table 4

Table 4. *EBP Knowledge and Activity Results*

NM-EBC Pre-Intervention



NM-EBC Post Intervention

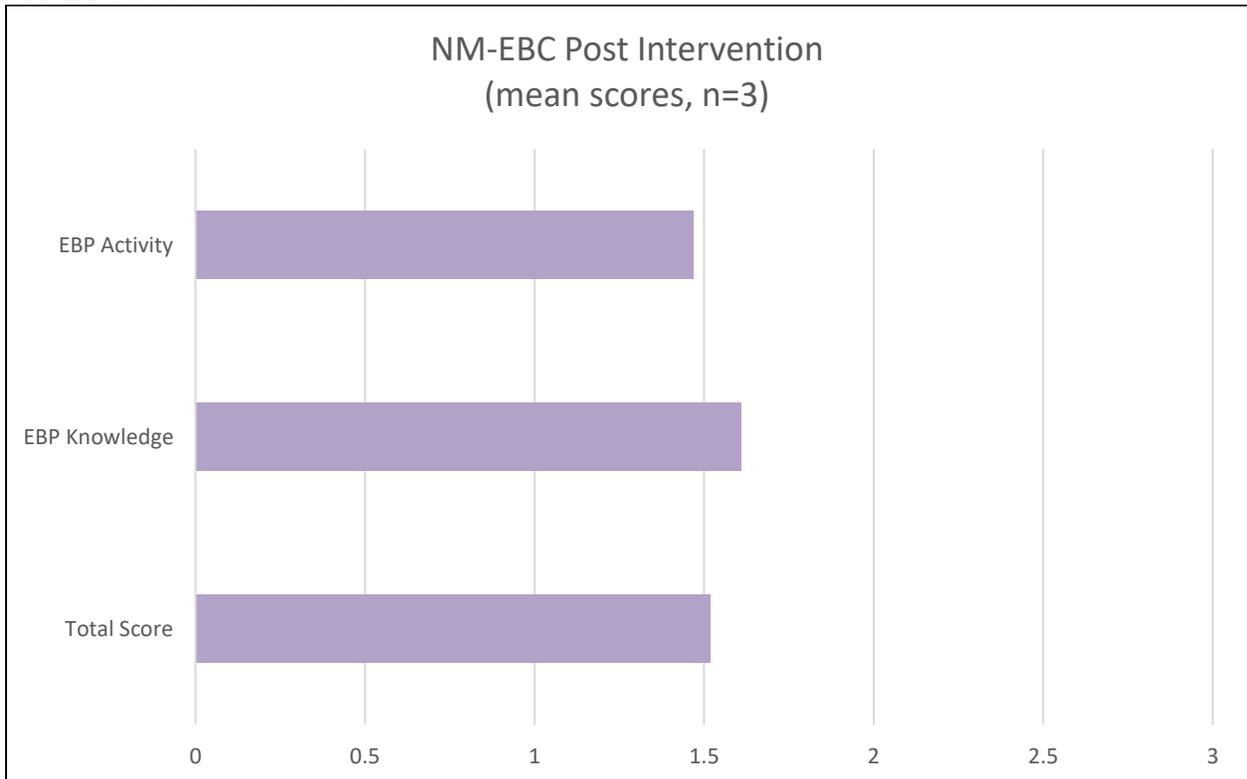


Table 5

Table 5. *EBP Knowledge and Activity Results Comparison*

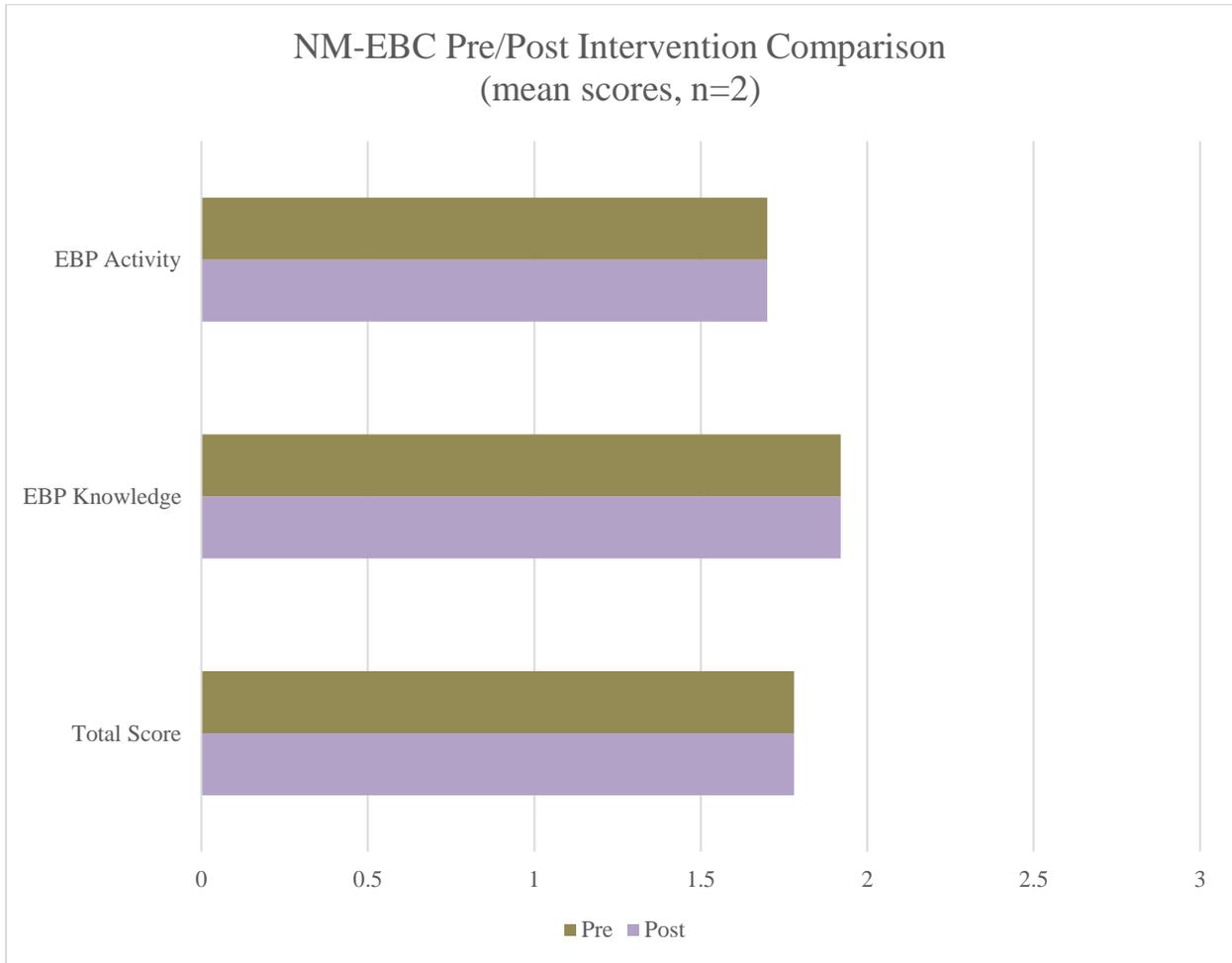


Figure 1

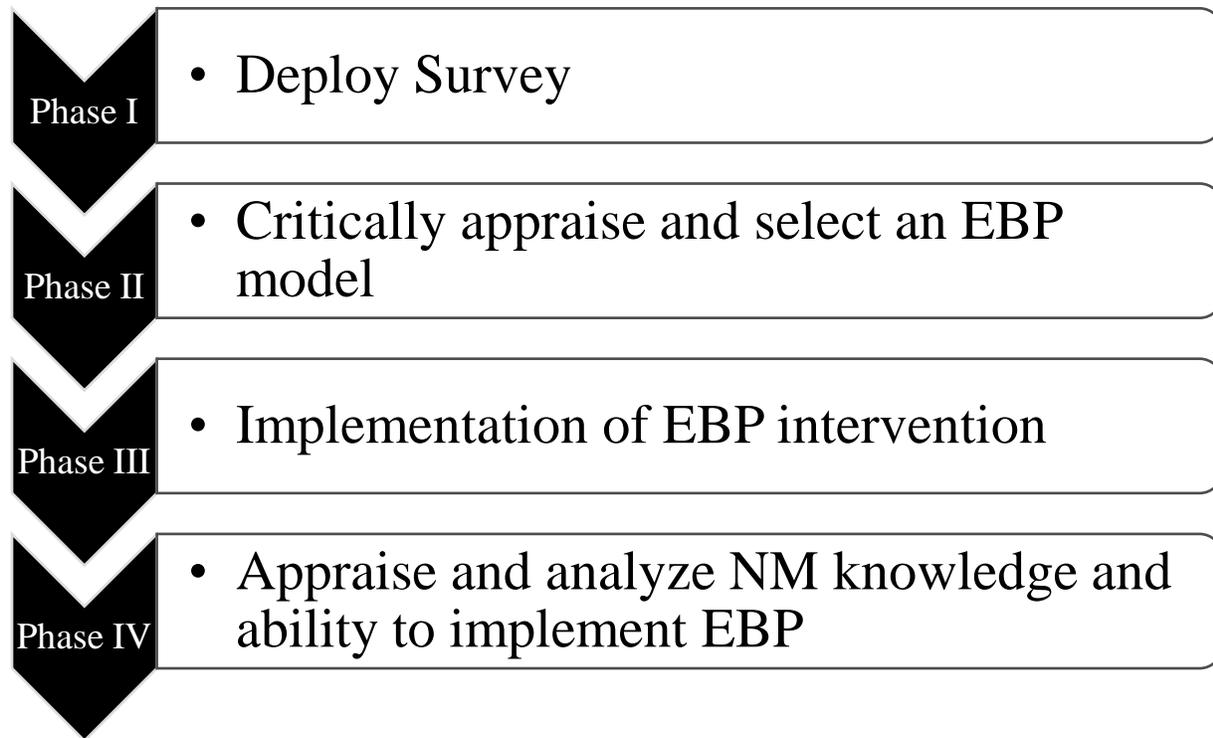
Figure 1. *Project Phases*

Figure 2

Figure 2. *Post Intervention Survey Comments*

What information on the CIHSA-JMU EBP website was most helpful?
<p>“The resources provides were the most helpful.”</p> <p>“I am very happy that we have easy and available access to a platform where we could retrieve, read and implement current Evidence Base practise to make changes in out unit”</p> <p>“The role and goals of EBP nursing and the John Hopkin's model”</p>
Comments/suggestions for website:
<p>“The site is useful and afford staff to be able to return as many times as needed to access the resources and information”</p> <p>“Maybe a bit more on Maternal and Child health (Antenatal, intrapartum and post delivery)”</p>

Note. The comments were direct quotes. Survey participants were of differing native cultures lending to variation in word tense and spelling.

Appendix A

Pre-Intervention Survey

Employee ID Number (ID number will be used only for pre and post intervention comparison and will be removed post results tally; the researcher has no ability to identify participants by this number)

--

Demographic Information

Gender

1. Male
2. Female
3. Choose not to specify

Native Culture

1. American
2. Canadian
3. Caymanian
4. Filipino
5. Great Britain
6. Indian
7. Jamaican
8. Latin American
9. Samoan
10. Other

Highest Level of Education Completed

1. Associate or Technical Degree
2. Bachelor's Degree
3. Master's Degree
4. Doctoral Degree

Current Role

1. Nurse Supervisor
2. Nurse Manager
3. Nurse Director
4. Other

Number of Years as a Registered Nurse

1. 0-4 years
2. 5-9 years
3. 10-14 years
4. 15-19 years
5. 20 or more years

Number of Years as a Nurse Manager

1. Less than 1 year
2. 1-4 years
3. 5-9 years
4. 10-14 years
5. 15-19 years
6. 20 or more years

Implementation Climate for Evidence-Based Practice

Please indicate the extent to which you agree with each statement:

0 = Not at all

1 = Slight extent

2 = Moderate extent

3 = Great extent

4 = Very great extent

Unit Focus on Evidence-Based Practice

One of my unit's main goals is to use evidence-based practices effectively.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Nurses in my unit think that the implementation of evidence-based practices is important.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Using evidence-based practices is a top priority on my unit.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Educational Support for Evidence-Based Practice

My unit provides conferences, workshops, or seminars focusing on evidence-based practices.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit provides evidence-based practice education.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit provides evidence-based practice educational materials, journals, etc.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Recognition for Evidence-Based Practice

Nurses on my unit who use evidence-based practices are seen as clinical experts.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Nurses who use evidence-based practices are held in high esteem on my unit.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Nurses on my unit who use evidence-based practices are more likely to be promoted.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Rewards for Evidence-Based Practice

My unit provides financial incentives for the use of evidence-based practices.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

The better you are at using evidence-based practices, the more likely you are to get rewarded.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit provides the opportunity to be compensated for time spent related to EBP projects or education.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Selection for Evidence-Based Practice

My unit hires nurses who have previously used evidence-based practice.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit hires nurses who have had formal education supporting evidence-based practice.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit hires nurses who value evidence-based practice.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Selection for Openness

My unit hires nurses who are adaptable.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit hires nurses who are flexible.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

My unit hires nurses open to new practices.

1. 0 Not at all
2. 1 Slight extent
3. 2 Moderate extent
4. 3 Great extent
5. 4 Very great extent

Nurse Manager Evidence-Based Practice Competency

For each statement below, please select the number associated with your perceived level of competency. Select only one response per statement.

Please use these definitions:

- 1) Not competent: Require assistance all of the time
- 2) Somewhat competent: Require assistance some of the time
- 3) Fully competent: Individually accomplish item without assistance
- 4) Expertly competent: Teach and assist others on the item

I am able to define evidence-based practice.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to locate primary evidence in bibliographic databases using search terms.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to ensure the delivery of care on my unit(s) aligns with evidence-based practice recommendations.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to evaluate processes and outcomes of evidence-based practice changes.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

Using existing critical appraisal checklists, I am able to identify key criteria in well-developed evidence summary reports

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use evidence to inform clinical decision-making.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use criteria about evidence-based practice in screening and hiring staff.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to participate on a team to develop evidence-based practice recommendations for my unit(s) and/or organization.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to critically appraise original research reports for practice implications.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to assist in implementing evidence-based practice change in my organization, unit(s).

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to differentiate among primary evidence, systematic reviews, and evidence-based guidelines.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to recognize ratings of strength of evidence when reading systematic reviews and evidence summary reports.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to participate in resolving issues related to implementing evidence-based practice.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use audit and feedback of data as an implementation strategy to promote use of evidence-based practice in my unit(s).

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use criteria about evidence-based practice in performance evaluation of staff.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to access clinical practice guidelines on various clinical topics.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. Expertly competent

Appendix B

Post Intervention Survey

Employee ID Number, located on your ID Badge. (This identifier will only be used to compare pre and post intervention results for those who participated in both surveys and will not be reported in the final form of this study. Your participation is confidential and anonymous)

Demographic Information

Gender

1. Male
2. Female
3. Choose not to specify

Native Culture

1. American
2. Canadian
3. Caymanian
4. Filipino
5. Great Britain
6. Indian
7. Jamaican
8. Latin American
9. Samoan
10. Other

Highest Level of Education Completed

1. Associate or Technical Degree
2. Bachelor's Degree
3. Master's Degree
4. Doctoral Degree

Current Role

1. Nurse Supervisor
2. Nurse Manager
3. Nurse Director
4. Other

Number of Years as a Registered Nurse

1. 0-4 years
2. 5-9 years
3. 10-14 years
4. 15-19 years
5. 20 or more years

Number of Years as a Nurse Manager

1. Less than 1 year
2. 1-4 years
3. 5-9 years
4. 10-14 years
5. 15-19 years
6. 20 or more years

Nurse Manager Evidence-Based Practice Competency

For each statement below, please select the number associated with your perceived level of competency. Select only one response per statement.

Please use these definitions:

- 1) Not competent: Require assistance all of the time
- 2) Somewhat competent: Require assistance some of the time
- 3) Fully competent: Individually accomplish item without assistance
- 4) Expertly competent: Teach and assist others on the item

I am able to define evidence-based practice.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to locate primary evidence in bibliographic databases using search terms.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to ensure the delivery of care on my unit(s) aligns with evidence-based practice recommendations.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to evaluate processes and outcomes of evidence-based practice changes.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

Using existing critical appraisal checklists, I am able to identify key criteria in well-developed evidence summary reports.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use evidence to inform clinical decision-making.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use criteria about evidence-based practice in screening and hiring staff.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to participate on a team to develop evidence-based practice recommendations for my unit(s) and/or organization.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to critically appraise original research reports for practice implications.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to assist in implementing evidence-based practice change in my organization, unit(s).

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to differentiate among primary evidence, systematic reviews, and evidence-based guidelines.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to recognize ratings of strength of evidence when reading systematic reviews and evidence summary reports.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to participate in resolving issues related to implementing evidence-based practice.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use audit and feedback of data as an implementation strategy to promote use of evidence-based practice in my unit(s).

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to use criteria about evidence-based practice in performance evaluation of staff.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

I am able to access clinical practice guidelines on various clinical topics.

1. 1 Not competent
2. 2 Somewhat competent
3. 3 Fully competent
4. 4 Expertly competent

What information on the CIHSA-JMU EBP website was most helpful to you?

Please provide any additional comments/suggestions for the CIHSA-JMU EBP website:

Appendix C

Implementation Climate Scale for Nursing

Adapted from Ehrhart, Aarons, & Farahnak (2014):

Ehrhart, M. G., Aarons, G. A., & Farahnak, L. R. (2014). Assessing the organizational context for EBP implementation: The development and validity testing of the Implementation Climate Scale (ICS). *Implementation Science, 9*, 157.

NOTE: Based on feedback from nursing subject matter experts, minor wording changes were made to make the scale appropriate for a nursing setting.

Instructions: Please indicate the extent to which you agree with each statement:

0	1	2	3	4
Not at all	Slight extent	Moderate extent	Great extent	Very great extent

Unit Focus on Evidence-Based Practice

1. One of my unit’s main goals is to use evidence-based practices effectively.
2. Nurses in my unit think that the implementation of evidence-based practices is important.
3. Using evidence-based practices is a top priority on my unit.

Educational Support for Evidence-Based Practice

4. My unit provides conferences, workshops, or seminars focusing on evidence-based practices.
5. My unit provides evidence-based practice education.
6. My unit provides evidence-based practice educational materials, journals, etc.

Recognition for Evidence-Based Practice

7. Nurses on my unit who use evidence-based practices are seen as clinical experts.
8. Nurses who use evidence-based practices are held in high esteem on my unit.
9. Nurses on my unit who use evidence-based practices are more likely to be promoted.

Rewards for Evidence-Based Practice

10. My unit provides financial incentives for the use of evidence-based practices.
11. The better you are at using evidence-based practices, the more likely you are to get rewarded.
12. My unit provides the opportunity to be compensated for time spent related to EBP projects or education.

Selection for Evidence-Based Practice

13. My unit hires nurses who have previously used evidence-based practice.
14. My unit hires nurses who have had formal education supporting evidence- based practice.

- 15. My unit hires nurses who value evidence-based practice.

Selection for Openness

- 16. My unit hires nurses who are adaptable.
- 17. My unit hires nurses who are flexible.
- 18. My unit hires nurses open to new practices.

Implementation Climate Scale (ICS) Scoring Instructions

Mark G. Ehrhart Gregory A. Aarons
mehrhart@mail.sdsu.edu gaarons@ucsd.edu

This measure assesses employees’ shared perceptions of the policies, practices, procedures, and behaviors that are rewarded, supported, and expected in order to facilitate effective EBP implementation.

Abbreviated Items and Scoring

Item #	Scale	Factor Loading	<i>α</i>
Scale 1: Focus on EBP			.91
1	One of this team/agency’s goals is to use EBP effectively	.94	
2	People think implementation is important	.85	
3	Using EBP is a top priority in this team/agency	.79	
Scale 2: Educational Support for EBP			.84
4	Provides conferences, workshops, or seminars	.97	
5	Provides EBP trainings or in-services	.75	
6	Provides EBP training materials, journals, etc.	.54	
Scale 3: Recognition for EBP			.88
7	Clinicians who use EBP are seen as clinical experts	.87	
8	Clinicians who use EBP are held in high esteem	.85	
9	Clinicians who use EBP are more likely to be promoted	.70	
Scale 4: Rewards for EBP			.81
10	Provides financial incentives for use of EBP	.91	
11	More likely to get a bonus or a raise	.77	
12	Provides ability to accumulate compensated time	.63	
Scale 5: Selection for EBP			.89
13	Selects staff who have previously used EBP	1.0	

14	Selects staff who have formal education supporting EBP	.72
15	Selects staff who value EBP	.70

Scale 6: Selection for Openness**.91**

16	Selects staff who are adaptable	.98
17	Selects staff who are flexible	.98
18	Selects staff who are open to new types of interventions	.65

SCORING THE SCALES

The score for each subscale is created by computing a mean score for each set of items that load on a given subscale. For example, items 1-3 constitute Scale 1.

COMPUTING THE TOTAL SCORE

A mean of the scale scores may be computed to yield the mean score for the total ICS.

Please direct any questions to Dr. Aarons by email at gaarons@ucsd.edu.

Appendix D

Nurse Manager EBP Competency Scale

Clayton J. Shuman
Robert J. Ploutz-Snyder
Marita G. Titler

The Nurse Manager EBP Competency Scale assesses a nurse manager's perceived level of competency regarding evidence-based practice.

Completion of the scale provides a total score and the following two subscale scores:

- 1) EBP Knowledge
- 2) EBP Activity

0-3 Likert response scale coded as follows:

- (0) Not competent**
- (1) Somewhat competent**
- (2) Fully competent**
- (3) Expertly competent**

To calculate **subscale scores**: 1)

EBP Knowledge

Sum scores on items 1, 2, 5, 9, 11, 12. Then divide by 6.

2) EBP Activity

Sum scores on items 3, 4, 6, 7, 8, 10, 13, 14, 15, 16. Then divide by 10.

To calculate **total score**:

Sum scores on all items. Then divide by 16.

Citation: Shuman, C., Ploutz-Snyder, R., & Titler, M.G. (2017). Development and Testing of the Nurse Manager EBP Competency Scale. *Western Journal of Nursing Research*. doi: 10.1177/0193945917728249

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Clayton J. Shuman, clayshu@umich.edu**

Nurse Manager EBP Competency Scale

Directions: For each statement below, please select the number associated with your perceived level of competency. Select only one response per statement.

Please use these definitions:

Not competent: Require assistance all of the time

Somewhat competent: Require assistance some of the time

3) **Fully competent:** Individually accomplish item without assistance

4) **Expertly competent:** Teach and assist others on the item

	Not competent	Somewhat competent	Fully competent	Expertly competent
1) I am able to define evidence-based practice.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2) I am able to locate primary evidence in bibliographic databases using search terms.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3) I am able to ensure the delivery of care on my unit(s) aligns with evidence-based practice recommendations.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4) I am able to evaluate processes and outcomes of evidence-based practice changes.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5) Using existing critical appraisal checklists, I am able to identify key criteria in well-developed evidence summary reports.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
6) I am able to use evidence to inform clinical decision-making.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7) I am able to use criteria about evidence-based practice in screening and hiring staff.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
8) I am able to participate on a team to develop evidence-based practice recommendations for my unit(s) and/or organization.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
9) I am able to critically appraise original research reports for practice implications.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
10) I am able to assist in implementing evidence-based practice change in my organization, unit(s).	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
11) I am able to differentiate among primary evidence, systematic reviews, and evidence-based guidelines.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
12) I am able to recognize ratings of strength of evidence when reading systematic reviews and evidence summary reports.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
13) I am able to participate in resolving issues related to implementing evidence-based practice.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
14) I am able to use audit and feedback of data as an implementation strategy to promote use of evidence-based practice in my unit(s).	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
15) I am able to use criteria about evidence-based practice in performance evaluation of staff.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

16) I am able to access clinical practice guidelines on various clinical topics.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
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Clayton J. Shuman, clayshu@umich.edu**

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