The Use of The Peanut Ball on Nulliparous Women laboring with An Epidural

DNP Scholarly Project

BY

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ACKNOWLEDGMENTS

- I offer great appreciation to God Almighty.
- Dr. Karin Smith, my project advisor in charge, and the rest of the Bradley University family.
- Dr. Leslie Wright- Brown, my primary project mentor.
- My family, Obinna, Mark, Justin, parents and siblings.
- Friends, management and colleagues at Saint Barnabas Medical Center, Livingston, New Jersey.
- Thank you all very much for your assistance and support.

INTRODUCTION

- Pain is a stressful experience, and women should choose the best therapeutic relief during labor.
- Although epidural is beneficial, it may prolong the length of labor for nulliparous women and result in increased instrumental deliveries or cesarean sections (C-sections).
- Continuous change in position and a more upright position after an epidural using the peanut ball (PB) may help alter these adverse effects.

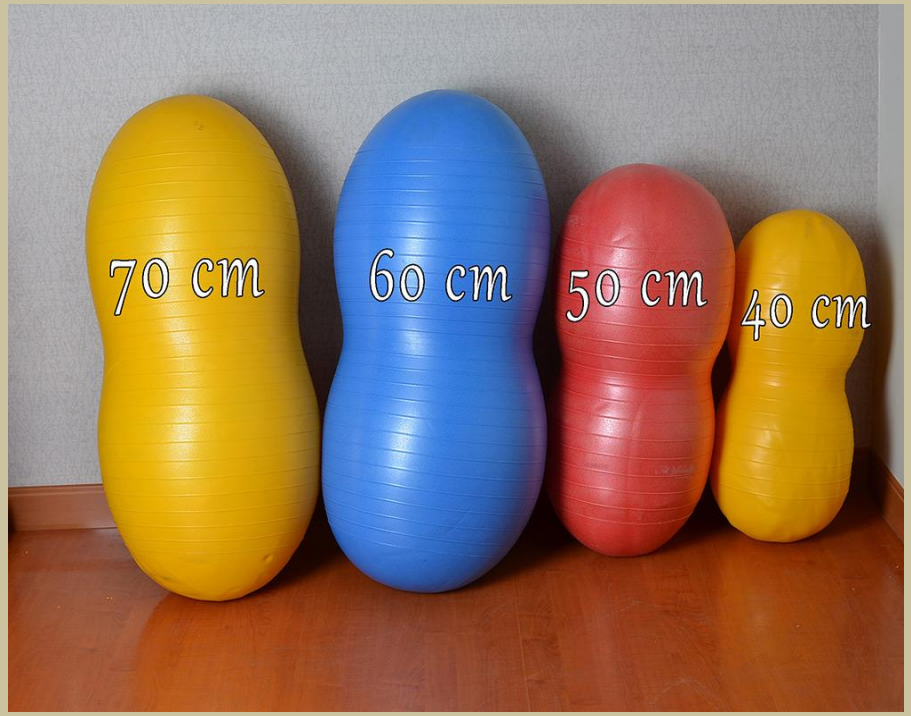
(Hung, & Liu, 2015; Kibuka & Thornton, 2017; Sitras et al., 2017).

THE PEANUT BALL

INTRODUCTION CONT…

- A peanut ball is an inflatable ball made of durable non-latex rubber.
- The peanut shape provides better posture control, improves stability, and helps in sustaining an upright posture.
- The peanut ball is, on average, 40 to 70 centimeters in size, the standard is 45 cm.
- Labor and delivery nurses (L&D) place the PB between the legs of a woman in labor to keep the pelvis open (Klump, 2017; Lythgoe, 2014; Payton, 2015).

PEANUT BALL SIZES AND RECOMMENDATIONS



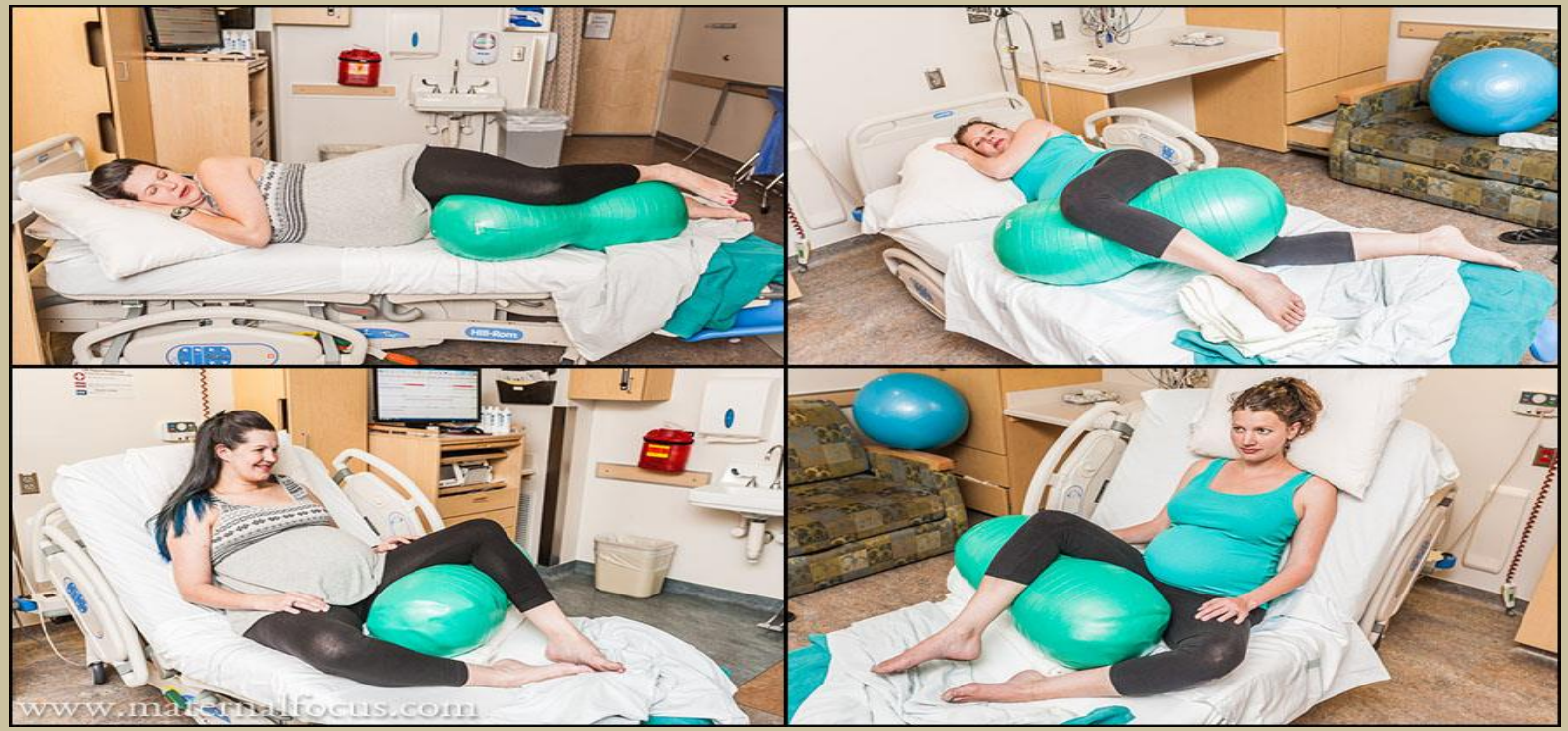
- 40cm – Recommended for women who are under 5′ 3
- 50cm – Recommended for women who are 5’3 ″ to 5’6 ″
- 60cm – Recommended for women who are 5’7 ″ or taller
- 70cm – ONLY to sit on and straddle.

INTRODUCTION CONT…

- The PB was introduced in L&D about 3 years ago, same year I was hired, but there was no policy on its use which led to inconsistent use by the nurses.

- This project aimed to create an evidence-based policy on using the peanut ball and provided education on safe and consistent usage guidelines.

THE PEANUT BALL AND POSITIONS



BACKGROUND & SIGNIFICANCE

- The use of epidural in labor can increase the length of labor in nulliparous women, arrest labor and failure to progress leading to increased instrumental deliveries and cesarean sections (c-section) rates.
- In 2011, one in three pregnant women delivered via cesarean delivery in the United States.
- A significant increase of cesarean delivery to 32.0 % from the initial rate of 4.5% in 1965.

(Caughey et al. & ACOG, 2014; Hung, & Liu, 2015; Kibuka & Thornton, 2017; Martin et al., 2018; Osterman & Martin 2014; Simarro et al., 2017; Souza et al., 2019; Tussey et al., 2015).

BACKGROUND & SIGNIFICANCE CONT…

- The rate of cesarean delivery in New Jersey is 36%, which is 12% higher than the national rate in 2017, and the 4th highest in the United States.
- Healthy People 2020 set the goal for (NTSV) cesarean delivery rate to be no more than 23.9% of births.
- This high rate of c-section is concerning due to its cost and complications, such as increased infection rate, anesthesia, hemorrhage, etc.

(Elflein, 2019; Kitchenman, 2015; Klump, 2017; Midwives of New Jersey [MNJ], 2019; New Jersey State Health Assessment Data [NJAHAD], 2019; Tussey et al., 2015).

NEEDS ASSESSMENT

- The increased duration of labor and the need for instrumental delivery and cesarean section has been found to relate to arrested labor progress.
- Studies suggest that frequent position change with a more upright position with the peanut ball may help with promoting labor progress.
- However, there was no approved guideline for using the peanut ball, leading to limited knowledge, inconsistent use and confidence among nurses in L&D.

(Hung, & Liu, 2015; Kibuka & Thornton, 2017; Simarro et al., 2017; Souza et al., 2019).

PROBLEM STATEMENT

- Failure of a nulliparous woman to progress in labor after an epidural leads to more instrumental and c-sections deliveries.
- Leading to maternal morbidity and mortality, because of anesthesia, bleeding, and infection.
- The peanut ball is an evidenced-based approach to enhance labor progress, but no policy led to inconsistent use and failure to promote its benefits.

(Hung, & Liu, 2015; Kibuka & Thornton, 2017; Klump, 2017 ; Payton, 2015; Simarro et al., 2017; Souza et al., 2019; Tussey et al., 2015; Zandvakili et al., 2017).

PROJECT AIM

- To create a policy on the safe use of the peanut ball on labor and delivery unit.
- To educate the labor and delivery nurses based on the approved guideline and promote the consistency of the peanut ball use.
- To support the health care organization's mission to deliver health care excellence, and superior service to patients.

OBJECTIVES

- Improve the nurse's knowledge and understanding of the policy and peanut ball use, with an average passing score of at least 80% on the post-test.
- Increase the nurse's confidence level for using the peanut ball based on the policy, with an average Likert score of 3.0 or higher on the post-education survey.
- Increase the nurse's consistency of using the peanut ball based on the policy, with an average Likert score of 3.0 or higher on the survey.

CLINICAL QUESTION/PICO

- For nurses working in the labor and delivery unit (P), how does the implementation of a peanut ball policy (I) compared to no policy (C) affect the knowledge, confidence, and consistency of the nurses to use the peanut ball (O)?

SYNTHESIS OF EVIDENCE: SEARCH STRATEGY

- A comprehensive literature search to find answers related to the clinical research question by using different research databases with a custom range between 2014-2020.

- Only 21 studies that corresponded to the inclusion criteria was utilized for this study.

SYNTHESIS OF EVIDENCE

- Epidural is a clinically useful in labor to relieve the pain during childbirth but can reduce uterine contraction and arrest labor progress.
- A positive correlation between the use of a peanut ball and the progress of labor.
- More normal vaginal deliveries, reduced second stage, less instrumental deliveries and cesarean sections rates.

(Aweda et al., 2016; Bannister-Tyrrell et al., 2014; Kibuka & Thornton, 2017; Klump, 2017; Payton, 2015; Simarro et al., 2017; Zaky, 2016; Zhang et al. (2017).

SYNTHESIS OF EVIDENCE CONT…

- Labor and delivery nurses have an active role with postural changes using the peanut ball.
- Several benefits relates to position changes with the peanut ball, including decreased length of labor and fetal descent.
- Appropriate nursing education promotes practice change by offering laboring women with an epidural, a peanut ball for postural changes every 1-2 hours or at the patient's request.

(Hickey & Savage, 2019; Lythgoe, 2014; Tussey et al., 2015; Mirzakhani et al., 2015; Outland & Alvarado, 2020; Payton, 2015; Sitras et al., 2017; Simpson & Lyndon, 2017; Stulz et al., 2018).

SYNTHESIS OF EVIDENCE CONT…

- On the contrary, some studies believed that the use of the peanut ball precisely in the active phase of labor does not appear to shorten the duration of labor, reduce rates of cesarean delivery, or reduce rates of fetal malposition in nulliparous patients.
- Nevertheless, most studies found no harmful effect and supported its use to promote maternal comfort and encourage postural changes (Aweda et al.,2016; Ghahiri & Khosravi, 2015; Hung & Liu, 2015; Mercier & Kwan, 2018; Roth et al., 2016).

SYNTHESIS OF EVIDENCE CONT…

- Despite all the benefits of vaginal birth, emergency cesarean section delivery could decrease both maternal and neonatal outcomes.
- Clinical providers should assess the impact and delivery method that is safe and most beneficial for the patient and their offspring.
- Practice safe ways to prevent the overuse of cesarean deliveries.

(Caughey et al. & American College of Obstetricians and Gynecologists [ACOG], 2014; Ghahiri & Khosravi, 2015; Mercier & Kwan, 2018)

CONCEPTUAL FRAMEWORK

- Change is unavoidable in health care, and providers have a role in ensuring change.
- Using best practices derived from change theories can help enhance the odds of success and subsequent practice improvement.
- Rogers' diffusion of innovations serves as the framework for this project which includes knowledge, persuasion, decision, Implementation, and confirmation.

(Agency for Clinical Innovation, 2015; Barrow et al., 2020; Nursing World, [n.d.]).

PROJECT DESIGN

- An evidence-based practice (EBP) project indicated to improve the quality of healthcare and patient outcome.
- Quality improvement involves a combined effort among health care staff and stakeholders to identify and handle problems in the healthcare system and is an efficient approach to analyzing practice performance to improve efficiency, patient safety, or clinical outcomes (Horntvedt et al., 2018: Silver et al., 2016).

DATA COLLECTION TOOLS

- Pre-test, post-test and post-education surveys.
- These tools consists of 5 questions with multiple choice responses and was completed by L&D nurses.
- These formats help identify pre-existing and post-education knowledge, deliver the required educational content and evaluate the consistency and confidence of using the peanut ball.

APPROVED PEANUT BALL POLICY

BARNABAS HEALTH
Saint Barnabas Medical Center
L&D POLICY AND PROCEDURE

TITLE: Guidelines for Safe Use of the Peanut Ball in Labor and Delivery Unit.
POLICY: Safe Use of the Peanut Ball
EFFECTIVE DATE: June 2020

Signed copy on file

APPROVED BY: Richard C. Miller MD **DATE:** 6/24/20
: Sheila Gilbert **DATE:** 6/24/20
: Lynne Holmes, CD **DATE:** 6/24/20

ATTACHMENTS:

PURPOSE: To provide the Labor and Delivery staff with guidelines on the safe use of the peanut ball.

DEFINITIONS:
Peanut Ball: A peanut ball is made of durable, non-latex material shaped like a peanut shell, where the middle circumference is smaller than the ends. A peanut ball is used to provide women with a positioning aid that has been shown to shorten the length of the second stage of labor significantly. Also, the cesarean rate for those that used the peanut ball was statistically lower than for those women who did not use the peanut ball.

QUALIFICATIONS: RN's and Licensed practitioners.

CRITERIA: All laboring patients with the exclusion of fractured pelvis, signs of intrauterine infection, and Category III fetal heart tracing or at the discretion of the physician.

POLICY:
1. The Labor and Delivery (L&D) RN will promote the safe use of the peanut ball for all laboring women with or without epidural analgesia for who would benefit from a positioning aid while in bed.

2. The peanut ball may be used with both external and internal electronic fetal monitoring equipment.

PEANUT BALL POLICY CONT…

3. The peanut ball is not to be used for positioning out of bed (i.e., floor, chair).

4. Peanut balls should be properly inflated.

5. Before use, the RN will explain the safe use of the peanut ball as a labor support mechanism for a position change to the patient and family.

EQUIPMENT: Peanut ball

BARNABAS HEALTH
Saint Barnabas Medical Center
L&D POLICY AND PROCEDURE

PROCEDURE:

1. The L&D RN will explain the safe use of the peanut ball as a labor support mechanism for a position change to the patient and family, before its use.
2. Remove the peanut ball from the plastic bag and tie a drawsheet around the ball to prevent discomfort from the peanut ball resting against the woman's legs.
3. The peanut ball is placed between the woman's legs within 30 minutes of receiving an epidural, once the patient is comfortable, or whenever needed for positioning while in bed.
4. Assist patient with turning or changing their position and adjusting the peanut ball every 1–1.5 hours.
5. The peanut ball may be removed when the cervix of the woman is completely effaced and dilated, passive descent has occurred, and she is ready to push actively.

DOCUMENTATION:

1. Document the use of peanut ball in the electronic health record (EHR) labor flowsheet under the OB Intrapartum band- Peanut ball.

PEANUT BALL POLICY CONT…

INFECTION CONTROL: Standard precautions

1. The peanut ball will be disinfected before and after each patient's use using the hospital-approved disposable germicidal wipes according to the manufacturer's instructions, to reduce the risk of healthcare-associated infections.
2. Clean peanut balls will be covered with a plastic bag and stored in the labor room.

SAFETY: Standard Precautions

ORIGINAL DATE:

REVIEWED: REVISED:

REFERENCES:

Tussey CM, Botsios E, Gerkin RD, Kelly LA, Gamez J, Mensik J. (2015). Reducing length of labor and cesarean surgery rate using a peanut ball for women laboring with an epidural. *Journal of Perinatal Education*, 24(1), 16-24.

AUTHOR:

LOCATION: Employee Portal – Policy and Procedures (Labor and Delivery).

MEASURED OUTCOMES

- Improve the nurse's knowledge and understanding of the policy and use, by an average passing score of at least 80% on the post-test.
- Increase the nurse's confidence level for using the peanut ball, as evidenced by an average Likert score of 3.0 or higher on the survey.
- Increase the nurse's consistency of using the peanut ball by an average Likert score of 3.0 or higher on the survey.

INSTITUTIONAL REVIEW BOARD/ETHICAL ISSUES

- Approval received from the Nursing Education Department.
- Proposal presented to the Inquiry Council Committee.
- Approval received from IRB with IRB ID # 20-01, and CUSHR at Bradley University with #20-046-Q.
- Recruitment/consent emailed to participants.
- No disclosures of participants' private information in this project, and no risks involved.

RESULTS

- Analysis of Implementation Process
  - Recruitment/consent emailed to L&D nurses (94)
  - Protection of privacy maintained (no disclosures of participants' private and sensitive data).
  - Data collection tool
    - Questionnaire – Pre and Post educational presentation
    - Post Educational Survey with Likert scale

ANALYSIS OF IMPLEMENTATION CONT…

- Project Liaison launched the education on the Net Learning platform to all 94 RNs.
- 60 participants completed the pre-educational questionnaire
- Power-point presentation via Net Learning software on the Safe Use of the Peanut Ball
- 59 participants completed the Post-educational questionnaire right after the education.

ANALYSIS OF IMPLEMENTATION CONT…

- Post education survey were completed within 2-3 weeks after the education.
- The pre-test, post-test, and post-education survey evaluations was analyzed by the project liaison with the Net learning software and emailed to me.
- Time frame for implementation was 4 weeks but more responses was collected a week after due to some technical errors that occurred during the initial launching.

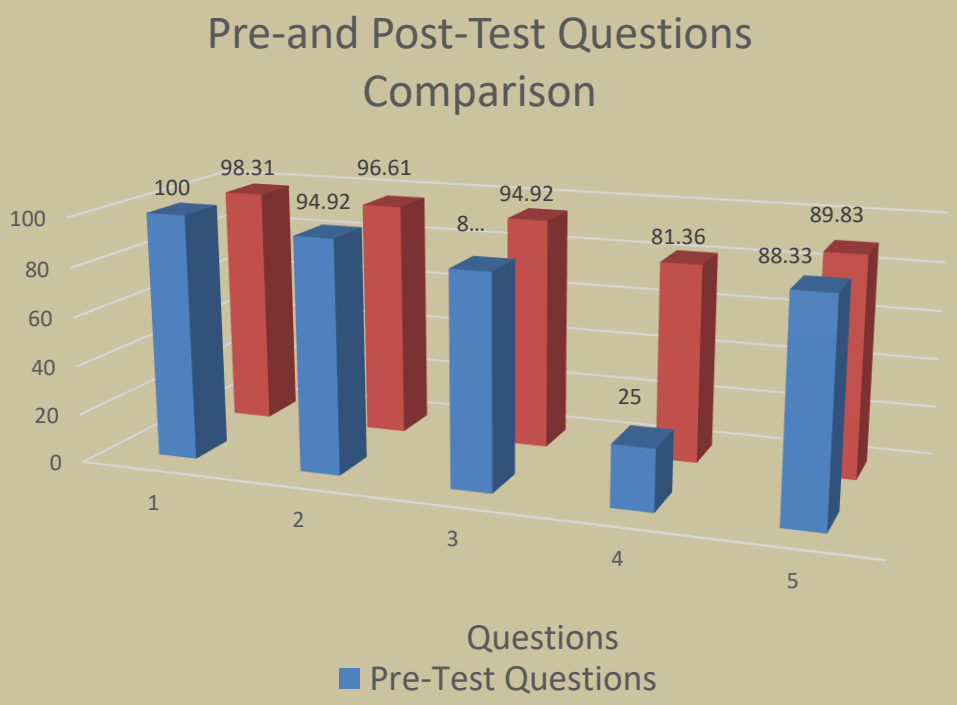
ANALYSIS OF IMPLEMENTATION CONT…

- Lessons learned
  - Priorities vary among individuals
  - Patience is crucial to enable cooperation and timely participation
  - Change is constant, and we all should try and to adjust to the required change.

ANALYSIS OF OUTCOME DATA

- The educational program was launched to the entire L&D nurses (94).
- Sixty participants completed the pre-test, but only 59 participants completed the post-test evaluation and 35 responses for the post-education survey.
- The post-test responses indicates more than 80% improvement on the nurse's knowledge and understanding of the safe use of the peanut ball.

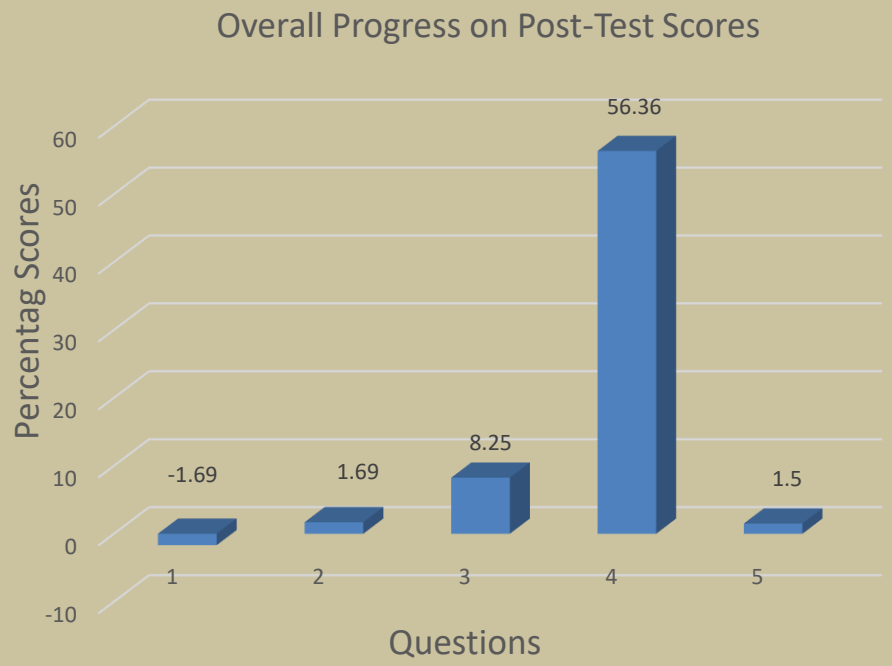
PRE AND POST TEST SCORES SUMMARY



Pre-and Post Test Questions

1. Which of the following is a benefit of the peanut ball to a patient laboring with an epidural?
2. The peanut ball can be used for the following when used appropriately?
3. Which patients should be excluded from using the peanut ball?
4. Based on the new peanut ball policy, how often are nurses expected to change laboring women's positions with the peanut ball?
5. Based on the new peanut ball policy, the peanut ball should be used on a patient following an epidural administration in which of the following?

PERCENTAGE PROGRESS ON POST-TEST SCORES



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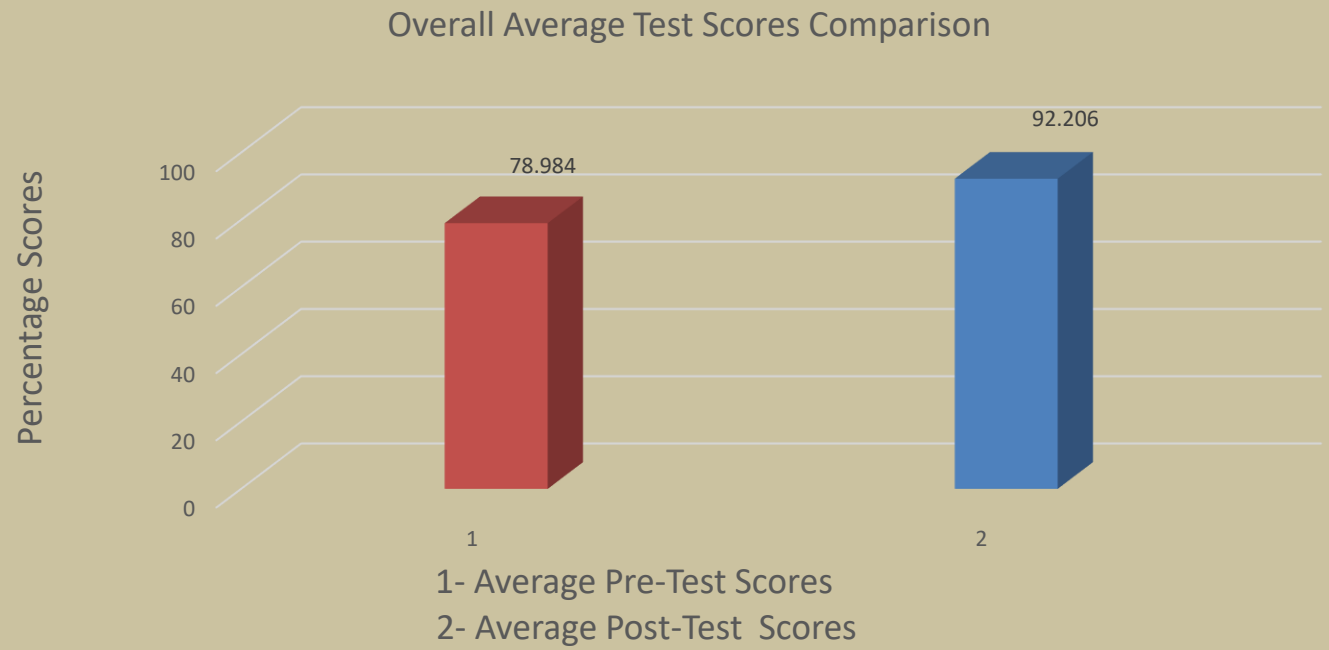
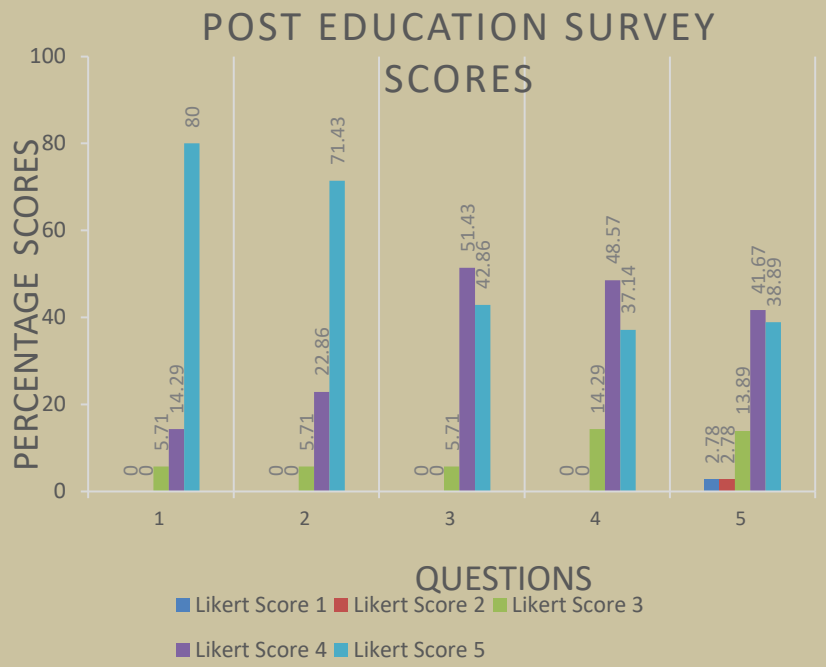
PERCENTAGE AVERAGE PROGRESS ON PRE- AND POST-TEST SCORES



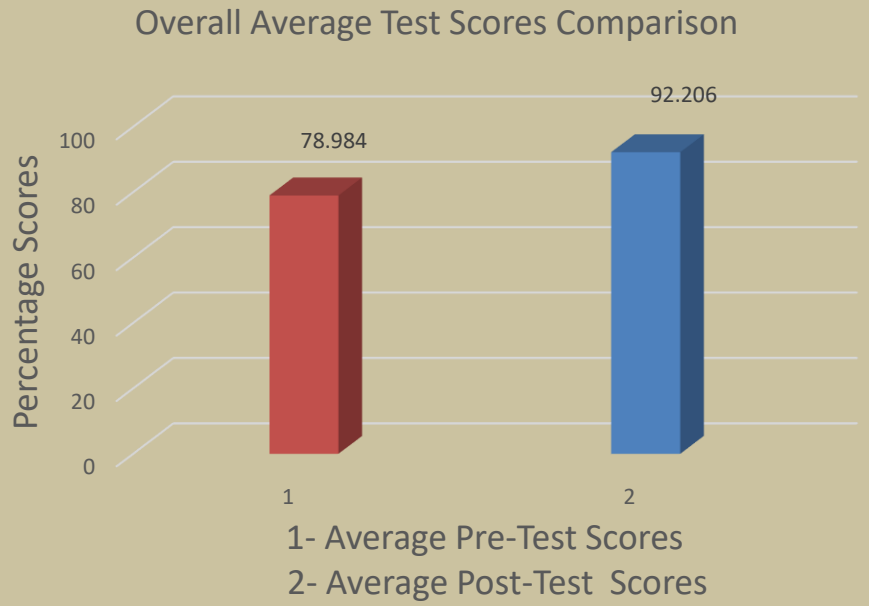
POST EDUCATION SURVEY EVALUATION



1. I document the peanut ball use on the electronic health record (EHR) when used on my patients.
2. I educate my laboring patients with an epidural on the use of the peanut ball.
3. I feel confident in using the peanut ball safely based on the approved guidelines.
4. I consistently use the peanut ball for patients based on the peanut ball policy.
5. Having a peanut ball policy in the labor and delivery department will promote the peanut ball's consistent use on eligible patients?

SUMMARY OF FINDINGS AND OUTCOMES LINKED TO SMART OBJECTIVES

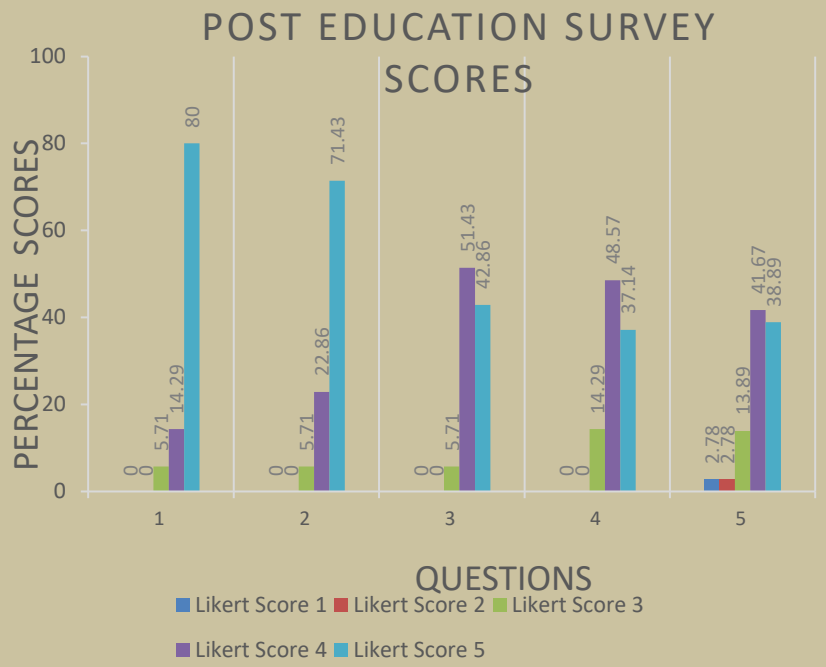
- Objective One: Achieved
  - Improve the nurse's knowledge and understanding of the policy and peanut ball use, as evidenced by an average passing score of at least 80% on the post-test.



OBJECTIVE TWO

- Increase the nurse's confidence level for using the peanut ball based on the approved policy, as evidenced by an average Likert score of 3.0 or higher on the post-education survey: Achieved
  - Question three of the post-education survey was utilized for this evaluation.

POST EDUCATION SURVEY EVALUATION



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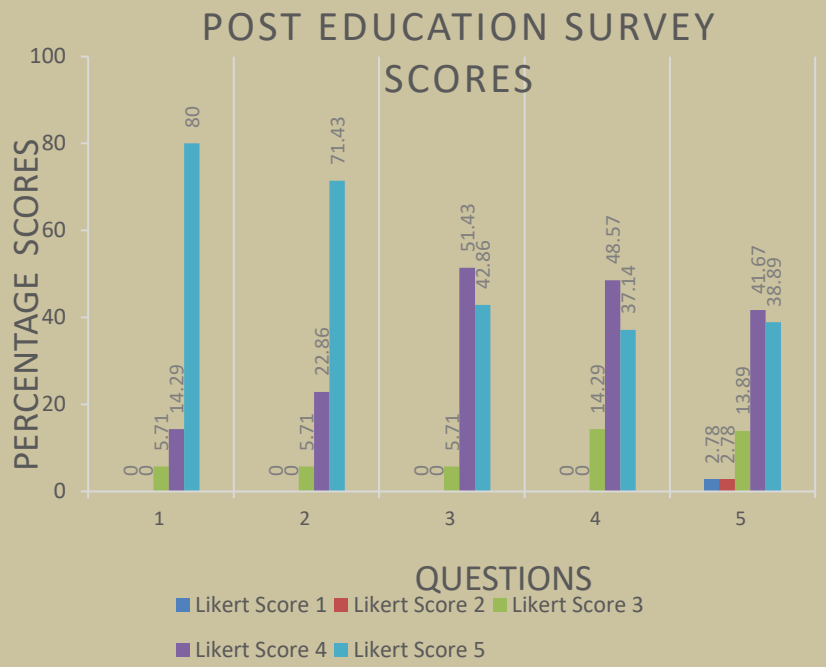
4. I consistently use the peanut ball for patients based on the peanut ball policy.
5. Having a peanut ball policy in the labor and delivery department will promote the peanut ball's consistent use on eligible patients?

OBJECTIVE THREE

- Increase the nurse's consistency of using the peanut ball based on the approved policy, as evidenced by an average Likert score of 3.0 or higher on the post-education survey: Achieved.
  - Question four and five of the post-education survey was utilized for this evaluation.

POST EDUCATION SURVEY EVALUATION



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LIMITATION

- Small sample size in a single facility.
- Technical error during program launching
- Lack of motivation of regarding continuing education
- Time limitations as regards high workload and project deadline.
- Introduction of new tasks /responsibilities for participants

DEVIATIONS FROM PROJECT PLAN

- A delay in project implementation due to IRB approval, project changes and COVID-19 pandemic.
- Virtual staff education due to mandatory social distancing and prohibition of social gatherings.
- Modification of the procedure and activities of the project plan to accommodate virtual learning and communication.

FUTURE RESEARCH

- The effectiveness of the peanut ball based on the policy with a larger sample controlling more potential confounders over six months.
- The effect of teaching parturient patients about using the peanut balls during labor over one year.
- A periodic evaluation of the policy for future improvement based on the most recent evidence-based guideline, which must be tested for validity and reliability.

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THANK YOU