2019

The Effects of Early Laxative, Diet, and Exercise Education on Postpartum Constipation Prevention

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BY

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A paper submitted in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

South Dakota State University

2019

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This Doctor of Nursing Practice (DNP) Project is approved as a credible and independent investigation by a candidate for the DNP degree and is acceptable for meeting the project requirements for this degree. Acceptance of this DNP Project does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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Acknowledgements

I wish to acknowledge the assistance of everyone who helped from start to finish with the implementation of this DNP Project. A special thank you to Dr. Robin Arends for offering me guidance through every step of the project. I also want to thank Alyssa Christensen, R.N., Jessica Mattheis, R.N., the Women's Center staff, Dr. Cynthia Elverson, Dr. Bryan Romsa, and Dr. Linda Burdette for their help with the DNP project.

Abstract

Introduction: Postpartum constipation is a common problem women face after delivery. Vaginal tears, pain medications, hormonal changes, decreased activity, dietary changes, and hemorrhoids can all increase the risk of developing constipation in the postpartum period. **Evidence Summary:** Constipation can cause pain, discomfort, decreased quality of life, and life-long consequences if left untreated. Nurses have a responsibility to the patient to provide quality care by taking a proactive approach to bowel management. Regular assessment of patient bowel habits and the provision of education on non-pharmacologic and pharmacologic prevention measures are recommended. **Gaps:** There is a lack of literature specific to constipation in the postpartum population, and the literature lacks specific guidelines for management due to the subjective nature of the problem. **Recommendations for Practice:** Prevention of constipation is superior to treating the problem after it has already occurred. Discussing prevention interventions with patients on admission and daily thereafter can improve quality of care and potentially reduce constipation related pain and discomfort.

Keywords: postpartum constipation prevention, PRN laxatives

Early Education and Laxative Utilization in Postpartum Constipation Prevention

Postpartum constipation is a common problem women face after delivery with a prevalence rate of about 41.8% (Cooklin, Amir, Jarman, Cullinane, & Donath, 2015; Turawa, Musekiwa, & Rohwer, 2015). Constipation can be characterized by hard or lumpy stools, stools that are difficult to pass, and the feeling of incomplete evacuation (Turawa et al., 2015). Vaginal tears, pain medications, hormonal changes, decreased activity, dietary changes, and hemorrhoids are common in the postpartum period and put a new mother at increased risk for constipation (Cerny, 2015). Constipation in the postpartum period increases the patient's pain and discomfort and decreases overall quality of life (Turawa et al., 2015). Prevention of postpartum constipation is superior to treating the problem after it has already occurred, because prevention is easier and less expensive than treatment (Lamb & Sanders, 2015). Educating patients about lifestyle and medication options is important for prevention of postpartum constipation (Wessel-Cessieux, 2015).

A literature search of all English-language studies on postpartum constipation was performed. CINAHL, EBSCOhost, Medline, Pubmed, and Google Scholar were searched using the keywords: *prevention, postpartum, laxative, and pain* combined with the keyword *constipation*. Exclusion criteria included studies focused on prevention and treatment of pediatric constipation and chronic constipation as there are differences in treatment approaches with those populations. Evidence that involved prevention and treatment of acute constipation in all adult populations was included, because there were a limited number of articles involving only the postpartum population. Additional inclusion criteria included studies published within the last five years, full-text, and in the

English language. The Johns Hopkins Nursing Evidence Level and Quality Guide was utilized for evidence appraisal. See Appendix B for a description of each evidence and quality level. There were 1-IB, 1-IIA, 1-IIB, 1-IIIA, 1-IIIB, 4-IVA, 1-IVB, and 3-VA quality pieces of evidence. See Appendix A for the evidence table. The review of literature was guided by the clinical question: In post-delivery patients on a postpartum unit (*P*), does the provision of structured education about laxatives, diet, and exercise for constipation prevention (*I*) compared to the current practice of inconsistent constipation prevention education (*C*) influence the administration of PRN laxative medications during hospitalization (*O*) within a 90 day time-frame (*T*)?

Evidence Summary

Women are at an increased risk of developing constipation, especially in the postpartum period. Postpartum patients may fear the pain of having a bowel movement if hemorrhoids or vaginal lacerations are present, which contributes to constipation. Constipation is largely subjective causing the exact burden to be not well known. The postpartum period is a time of hormonal, physical, and emotional stress on the body, and constipation can place additional stress on a new mother and decrease quality of life (Turawa et al., 2015).

Constipation susceptibility increases with age and pregnancy, and women have a higher prevalence than men (Forootan, Bagherl, & Darvishl, 2018). Constipation is often caused by slow colonic transit, a low fiber diet, a sedentary lifestyle, and frequently ignoring the urge to defecate. It is generally characterized by hard stool that is difficult to pass, infrequent bowel movements, straining to pass stool, and the feeling of incomplete

bowel evacuation (Lee, 2015). However, the definition is largely based on personal perception and can be misleading and debated (Lamb & Sanders, 2015).

Risk of constipation in the postpartum. There are a number of factors that put mothers at an increased risk for the development of constipation during the postpartum period. Vaginal tears, pain medications, hormonal changes, decreased activity, dietary changes, and hemorrhoids can all increase the risk of developing constipation. Vaginal tears can cause perineum tenderness and create anxiety and hesitancy for the patient's first bowel movement. Opioid pain and labor medications decrease gut motility leading to constipating effects (Cerny, 2015). Acknowledging risk factors and discussing prevention interventions with patients can improve quality of care and decrease the likelihood of constipation related complications (Lee, 2015).

Consequences. Constipation can be an embarrassing topic for many women to bring forth to their care provider. They may feel that constipation is normal after pregnancy. Pain and discomfort caused by constipation in the postpartum period can place additional stress on a new mother that is recuperating from the effects of delivery (Turawa et al., 2015). Left untreated, constipation can worsen and potentially cause lifelong complications like hemorrhoids, anal fissures, and rectal prolapse. Hemorrhoids are caused by straining and passing hard stool and can cause itching, burning, pain, and sometimes bleeding with defecation (Lamb & Sanders, 2015). Straining can also damage the pudendal nerve and weaken the muscles of the pelvic floor (Verghese et al., 2015).

Non-pharmacologic. Non-pharmacological management of constipation is often underutilized in the hospital setting due in large part to the readily available medication options (Wessel-Cessieux, 2015). Healthy lifestyle factors can play an important role in

the prevention of constipation (Lamb & Sanders, 2015). A low-fiber diet, low fluid-intake, and physical inactivity are risk factors for the development of constipation. Eating a diet high in fiber (whole grains, rice, fresh fruits and vegetables, beans, nuts, and dried fruit), increasing water intake to a minimum of 2 liters per day, and getting up and walking early in the postpartum period are recommended to prevent constipation. Foods high in fiber should be introduced gradually to a goal of 25-30 grams of fiber per day. Bloating and flatulence are potential side-effects of introducing too much fiber too quickly in the diet (Shin, Toto, & Schey, 2015). Adequate hydration is important because it helps move gastric content through the digestive tract. Fiber makes food softer and bulkier, which eases stool passage (Forootan et al., 2018).

Pharmacologics. For some people, medications may be required to prevent or relieve constipation (Bardsley, 2017). Laxatives are the drug of choice if pharmacological intervention is necessary (Turawa et al., 2015). Laxatives can help prevent and relieve constipation by various mechanisms of action depending on the drug. Bulk-forming laxatives work by bulking up stool through water absorption and prompting intestinal contraction. Osmotic laxatives work by drawing water into the colon to ease stool transit. Stimulant laxatives work by stimulating intestinal contraction (Forootan et al., 2018). Stool softeners are another option if fluid and fiber intake is adequate. There is limited evidence to support use as monotherapy. In women with vaginal tears, the recommendation is to use a stool softener and an osmotic laxative for around 10 days after delivery (Shin et al., 2015).

Medications used for constipation relief should always be taken with caution during pregnancy and while breastfeeding. Women may use medication they had prior to

pregnancy or seek advice from family and friends about what medications they should take for constipation. Proper education from care providers is essential to promote safe and effective medication options for the postpartum breastfeeding mother (Lamb & Sanders, 2015).

A laxative that is not excreted in breast milk and is effective and well tolerated should be chosen (Verghese, Futaba, & Latthe, 2015). Bulk, osmotic, and stimulant laxatives and stool softeners are all safe to use while breastfeeding. Osmotic and bulk laxatives are the preferred first-line choice of laxatives. However, bulk laxatives can take up to 72 hours to take full effect and should not be used for opioid-induced constipation. Stimulant laxatives can be used occasionally for a rapid-acting effect when colon motility is poor, as in the case of opioid-induced constipation. Stool softeners are best used in combination with other laxatives (United States National Library of Medicine, 2019).

When feces remain in the bowel for an extended time, more water is reabsorbed and stool becomes harder and more difficult to pass (Bardsley, 2017). Osmotic laxatives like polyethylene glycol and magnesium citrate work by keeping fluid in the bowel and are good options for constipation prevention and treatment. Stimulant laxatives work by increasing intestinal motility and are more effective than bulk-forming laxatives in pregnancy (Lamb & Sanders, 2015).

Nurses role. Nurses play a key role in recognizing, preventing, and treating constipation (Lee, 2015). Research shows that the management of constipation by providers is often performed inadequately. A lack of knowledge of the assessment and management of constipation can lead to poorer outcomes. Nurses are often educated to monitor and intervene after the complaint is already evident rather than assessing bowel

habits prior to a problem. A proper bowel assessment includes the identification of the patient's typical bowel pattern, last bowel movement, diet, mobility, fluid intake, medications, previous bowel complications, and present concerns (Shin et al., 2015).

The medications used for constipation are often scheduled PRN to enable individualized treatment based on patient's needs. PRN medications place a great deal of responsibility on the nurse to offer the medications and educate on available options (Shin et al., 2015). Nurses need to assess bowel management and constipation on admission and daily thereafter to provide optimal care and health promotion (Zanik & Gray, 2015). Currently, there is no clinical practice guideline to govern exact timing for education provision.

Gaps in the Literature

Constipation does not have a universally accepted definition due to its subjectivity, which can make it difficult to determine when a person's normal bowel pattern is adversely effected (Lee, 2015). The lack of a clear definition makes outcomes of constipation interventions difficult to measure, which may be the reason for the lack of quality research studies regarding postpartum constipation prevention measures.

Constipation is the most common bowel problem in older adults and patients taking opioid pain medications, so many of the studies found within the search focused on constipation in those populations (Wessel-Cessieux, 2015). There were very few that focused on the postpartum population independently. With scarce research specific to postpartum constipation prevention, there was limited evidence on many of the pharmacologic and non-pharmacologic interventions used to treat constipation.

There are no studies that offer specific guidance on a bowel management regimen for postpartum mothers in the hospital setting. Dietary changes and increased fluid intake

are currently recommended as non-pharmacological options of preventing constipation, but the evidence is largely based on expert opinion, rather than clinical trials (Bardsley, 2017). There was also insufficient research to offer guidance on the order for which pharmacological interventions should be utilized in the postpartum period (Sanders & Lamb, 2015).

Recommendations for Practice

Research suggests a proactive approach to bowel management to prevent complications of constipation (Zanik & Gray, 2015). Prevention of constipation is superior to treating the problem after it has already occurred (Lamb & Sanders, 2015). Nurses are in a position to identify patients who are at risk for constipation on admission and educate them about both pharmacologic and non-pharmacologic measures early in their hospital stay. A proper patient bowel history is important to identify the patient's typical bowel routine, date of last bowel movement, medications that may contribute to constipation, and any previous bowel complications (Shin et al., 2015). Increased intake of fluids, exercise, and consumption of foods high in fiber along with the use of osmotic, bulk, and stimulant laxatives for women at increased risk may be effective in the prevention and management of constipation in the immediate postpartum period (Wessel-Cessieux, 2015).

Conclusion

Postpartum constipation is a preventable complication with proper education early in the patient's stay. Prevention is superior to treating the problem once it has already occurred. The provision of structured education about laxatives, diet, and exercise from

the bedside nurse has the potential to increase the utilization of PRN laxative medications and decrease prevalence of constipation in the postpartum period.

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Appendix A

Evidence Table

Author, Year	Study Objective/ Intervention Or exposures compared	Design	Sample (N)	Outcomes Studied (how Measured)	Results	Quality
Graziano et al., 2014	Assessment of bowel function in the peripartum period	Randomized Control Trial	101 participants	Patients received a survey to record date and consistency of 1st bowel movement. Bristol Stool Form Scale was used.	2/3 of women had normal stool transit times postpartum. Breastfeeding and cesarean delivery increase stool transit times.	1B
Zanik & Gray, 2015	Assessed pre- and post-audit of CRAT utilization	Quasi-Experimental Study	50 inpatients	Documentation of bowel activity	Documentation of bowel movements increased from 8% to 75% after implementing CRAT	2A
Turawa, Musekiwa, & Rohwer, 2015	Quality of evidence to support various interventions that prevent postpartum constipation	Systematic Review with RCTs and quasi-randomized trials	5 trials	4 compared a laxative vs. placebo and 1 compared laxative plus bulking agent	Insufficient evidence to conclude effectiveness and safety of laxatives	2B
Forootan, Bagherl, & Darvishl, 2018	Treating and managing constipation	Systematic Review and Meta-Analysis: Non-Experimental	80 Articles	Diagnosis and management of constipation	Diagnostic and therapeutic options important	3A

Cooklin, Amir, Jarman, Cullinane, & Donath, 2015	To study maternal physical health symptoms in the 8 weeks postpartum	Non-Experimental study	229 primiparous women	A checklist of postpartum health symptoms and assessment of fatigue symptoms	Women have significant health issues in the first weeks of the postpartum period	3B
Bardsley, 2017	Assessment and treatment options for patients with constipation	Research article	N/A	N/A	N/A	4A
Shin, Toto, & Schey, 2015	Postpartum bowel changes	Consensus Panels	N/A	N/A	N/A	4A
Verghese, Futaba, & Latthe, 2015	Constipation in pregnancy	Expert opinion	N/A	N/A	N/A	4A
Wessel-Cessieux, 2015	Constipation management in older people in hospital	Double-blind peer reviewed article	N/A	N/A	N/A	4A
Cerny, 2015	Interventions to prevent and treat postpartum constipation	Expert opinion	N/A	N/A	N/A	4B
Emly & Marriott, 2017	Management of Constipation	Research Article	N/A	N/A	N/A	5A

Lamb & Sanders, 2015	Education and interventions for constipation and hemorrhoids	Research Article	N/A	N/A	N/A	5A
Lee, 2015	Combating Constipation	Double-blind Peer Review Research Article	N/A	N/A	N/A	5A

Appendix B

Johns Hopkins Nursing Evidence-Based Practice Appraisal Tool

<table>
<tr><th>Evidence Levels</th><th>Quality Ratings</th></tr>
<tr><td>Level I

Experimental study, randomized controlled trial (RCT)

Explanatory mixed method design that includes only a level I quantitative study

Systematic review of RCTs, with or without meta-analysis</td><td rowspan="3"><u>Quantitative Studies</u>

A <u>High quality</u>: Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence.

B <u>Good quality</u>: Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.

C <u>Low quality or major flaws</u>: Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.

<u>Qualitative Studies</u>

No commonly agreed-on principles exist for judging the quality of quaLitative studies. It is a subjective process based on the extent to which study data contributes to synthesis and how much information is known about the researchers' efforts to meet the appraisal criteria.

For meta-synthesis, there is preliminary agreement that quality assessments of individual studies should be made before synthesis to screen out poor-quality studies[1].

A/B <u>High/Good quality</u> is used for single studies and meta-syntheses[2].

The report discusses efforts to enhance or evaluate the quality of the data and the overall inquiry in sufficient detail; and it describes the specific techniques used to enhance the quality of the inquiry. Evidence of some or all of the following is found in the report:

• Transparency: Describes how information was documented to justify decisions, how data were reviewed by others, and how themes and categories were formulated.

• Diligence: Reads and rereads data to check interpretations; seeks opportunity to find multiple sources to corroborate evidence.

• Verification: The process of checking, confirming, and ensuring methodologic coherence.

• Self-reflection and scrutiny: Being</td></tr>
<tr><td>Level II

Quasi-experimental study

Explanatory mixed method design that includes only a level II quaNtitative study

Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis</td></tr>
<tr><td>Level III

Nonexperimental study

Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis

Exploratory, convergent, or multiphasic mixed methods studies

Explanatory mixed method design that includes only a level III quaNtitative study

QuaLitative study Meta-synthesis</td></tr>
</table>

	continuously aware of how a researcher's experiences, background, or prejudices might shape and bias analysis and interpretations. • Participant-driven inquiry: Participants shape the scope and breadth of questions; analysis and interpretation give voice to those who participated. • Insightful interpretation: Data and knowledge are linked in meaningful ways to relevant literature. **C <u>Low quality</u>** studies contribute little to the overall review of findings and have few, if any, of the features listed for high/good quality.

Evidence Levels	Quality Ratings
Level IV Opinion of respected authorities and/or nationally recognized expert committees or consensus panels based on scientific evidence Includes: • Clinical practice guidelines • Consensus panels/position statements	**A** **High quality:** Material officially sponsored by a professional, public, or private organization or a government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies and definitive conclusions; national expertise clearly evident; developed or revised within the past five years **B** **Good quality:** Material officially sponsored by a professional, public, or private organization or a government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations of included studies with fairly definitive conclusions; national expertise clearly evident; developed or revised within the past five years **C** **Low quality or major flaws:** Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the past five years
Level V Based on experiential and nonresearch evidence Includes: • Integrative reviews • Literature reviews • Quality improvement, program, or financial evaluation • Case reports • Opinion of nationally recognized expert(s) based on experiential evidence	**Organizational Experience (quality improvement, program or financial evaluation)** **A** **High quality**: Clear aims and objectives; consistent results across multiple settings; formal quality improvement, financial, or program evaluation methods used; definitive conclusions; consistent recommendations with thorough reference to scientific evidence **B** **Good quality**: Clear aims and objectives; consistent results in a single setting; formal quality improvement, financial, or program evaluation methods used; reasonably consistent recommendations with some reference to scientific evidence **C** **Low quality or major flaws**: Unclear or missing aims and objectives; inconsistent results; poorly defined quality improvement, financial, or program evaluation methods; recommendations cannot be made **Integrative Review, Literature Review, Expert Opinion, Case Report, Community Standard, Clinician Experience, Consumer Preference** **A** **High quality**: Expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader(s) in the field **B** **Good quality**: Expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions

	C <u>Low quality or major flaws</u>: Expertise is not discernable or is dubious; conclusions cannot be drawn

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Abstract

Background/Purpose: Women in the postpartum period are at increased risk for the development of constipation, which can cause additional discomfort and decrease overall quality of life. Increasing dietary fiber and water intake, early ambulation, and laxatives as needed are recommended for prevention and treatment of constipation. **Methods:** A DNP Project was implemented on a postpartum unit to determine if the provision of prevention education and offering of PRN laxative medications by nurses upon arrival to the postpartum unit influenced the number of PRN laxative medications administered. **Conclusions:** The Project spanned 3 months. Data was collected from the EMR regarding administration of PRN laxative medications and education the patients received on constipation prevention upon admission to the postpartum unit. The identical type of data was collected on qualifying patients from the same three-months from the year prior. Statistical significance was found for an increase in PRN laxative administration post-intervention. **Implications for Practice:** Upon comparison of the data, it was found that early patient education and offering of pharmacological therapy from the nursing staff early in the hospital stay increased the administration of PRN laxative medications which could lead to decreased constipation in the postpartum period.

Keywords: postpartum constipation prevention, PRN laxatives

The Effects of Early Laxative, Diet, and Exercise Education on Postpartum Constipation Prevention

Postpartum constipation is a common problem women face after delivery due to an increase in risk factors such as vaginal tears, pain medications, hormonal changes, decreased activity, dietary changes, and hemorrhoids (Cooklin, Amir, Jarman, Cullinane, & Donath, 2015; Cerny, 2015). Prevention is superior to treating the problem after it has already occurred and early awareness of the causes and treatments of postpartum constipation can help with prevention (Lamb & Sanders, 2015). Educating patients about lifestyle modifications and medication options to combat constipation are important prevention strategies (Wessel-Cessieux, 2015).

Significance. Postpartum constipation can negatively impact the quality of life and cause additional discomfort for a new mother who is adjusting to bodily stressors caused by delivery (Turawa, Musekiwa, & Rohwer 2015). Constipation can impact a mother's physical and social health and hinder the ability to care for her newborn's needs due to abdominal discomfort and complications such as hemorrhoids (Lamb & Sanders, 2015). Early awareness of the causes and treatments of postpartum constipation can help with prevention.

Nurses in the hospital setting are in a position to recognize patients at risk for constipation and provide education about good bowel habits early in their stay (Wessel-Cessieux, 2015). Prior to the DNP Project's implementation, there was no structured educational intervention on the postpartum unit where the project took place. Patients were provided printed material with constipation prevention education in their discharge paperwork but were not given any formal education early in the stay. Nurses dispensed

laxatives in a reactive manner, rather than offering them to patients early in their stay (A. Christensen, personal communication, June 25, 2018).

Decreased quality of life and additional stress and discomfort with defecation are possible complications of delayed prevention/treatment. The process of delivering a baby, either cesarean section or vaginally, places a great deal of stress on the body, and additional pain and discomfort related to defecation can exacerbate stress on the new mother. Pressure on the rectal wall leads to pain and restlessness in the patient and decreases quality of life (Turawa et al., 2015).

PICOT question. The Doctor of Nursing Practice (DNP) Project was guided by the clinical question, which utilizes the PICOT framework. The PICOT question was: In post-delivery patients on a postpartum unit (*P*), does the provision of structured education about laxatives, diet, and exercise for constipation prevention (*I*) compared to the current practice of inconsistent constipation prevention education (*C*) influence the administration of PRN laxative medications during hospitalization (*O*) within a 90 day time-frame (*T*)?

Synthesis of the Evidence

Health professionals may fail to effectively assess and treat constipation in the immediate postpartum period due to the sensitivity of the topic for some patients. A proactive approach needs to taken and patients should be given education and advice about what laxatives are available to them, diet, and safe amount of exercise for bowel management within an hour of admission to the postpartum unit. Non-pharmacological management of constipation is often underutilized in the hospital setting due in large part to the readily available medication options (Wessel-Cessieux, 2015).

Nurses are often educated to monitor and intervene after the complaint is already evident rather than assessing bowel habits prior to a problem. Nurses need to assess bowel management and risk for constipation on admission to the postpartum unit and daily thereafter to provide optimal care and health promotion (Zanik & Gray, 2015). Pain and discomfort can develop if constipation develops and can place additional stress on a new mother that is recuperating from the effects of delivery (Turawa et al., 2015). Left untreated, constipation can worsen and potentially cause lifelong complications like hemorrhoids, anal fissures, and rectal prolapse (Lamb & Sanders, 2015).

Gaps in the Literature

Constipation is a subjective condition without a universally accepted definition, which makes it difficult to agree on the exact prevalence of constipation. There is also very little literature on assessment tools and risk factors of constipation in the acute hospital setting (Wessel-Cessieux, 2015). General conclusions cannot be drawn about the safety and effectiveness of laxative use for inpatient postpartum patients based on current literature (Turawa et al., 2015).

Recommendations for Practice

Research suggests a proactive approach to bowel management to prevent complications of constipation (Zanik & Gray, 2015). Nurses should identify patients who are at risk for constipation on admission and educate them about both pharmacologic and non-pharmacologic measures (Wessel-Cessieux, 2015). The education provided should include increasing daily water intake to a minimum of 2 liters per day, consume a diet high in fiber (25-30g) per day, fruits, and vegetables, ambulating as much as condition allows, and utilizing laxatives as needed per physician order. Osmotic and bulk laxatives

are the preferred first-line choice. However, bulk laxatives can take up to 72 hours to take full effect. Stimulant laxatives can be used occasionally for a rapid-acting effect (United States National Library of Medicine, 2019).

Methods

Setting. The DNP Project took place on an urban Midwestern hospital's 24-bed postpartum unit. The unit's population includes postpartum women who have delivered vaginally or through cesarean section (c-section), newborn babies, and postoperative breast/gynecological procedure patients. The unit typically staffs between two and eight Registered Nurses (RNs). The nurses typically work 12 hour shifts and are assigned four to five patients each (A. Christensen, personal communication, June 25, 2018).

Sample. The sample population consisted of post-delivery patients. Women aged 18 and older who delivered via cesarean section or vaginally were included in the project. Three hundred seventy-one (71%) of the pre-intervention and 363 (73%) of the post-intervention sample population delivered vaginally. One hundred fifty-three (29%) of the pre-intervention and 135 (27%) of the post-intervention sample population delivered via c-section. The age range of women included in the project was between the ages of 18 and 47 years of age. See Appendix F. The typical length of stay ranged from 24-72 hours. The majority of the patient population was White/Caucasian, but the unit also serves a large number of Hispanic and Nepali women. An audio-visual interpreter service was utilized to educate non-English speaking persons (A. Christensen, personal communication, June 25, 2018).

Development of the intervention tool. Prior to the DNP Project implementation, patients on the postpartum unit received a welcome packet with information about the

unit and the early postpartum period, which did not include information on prevention of constipation. Evidence-based information on lifestyle modifications and medication options for the prevention of postpartum constipation was added to the existing welcome packet and was addressed by the bedside nurse within an hour of patient admission to the postpartum unit. The Project Coordinator created this educational insert based on evidence-based constipation prevention literature. See Appendix C. A time stamp in the electronic medical record (EMR) was created by the facility information technology department to document that the education was provided.

The Project Coordinator created an evidence-based educational power point and presented the information on the new process to the nurses at a mandatory unit meeting. The power point included a detailed explanation of the nurse's role in the DNP Project and drug information about each class of laxative medication. The presentation was included in the weekly update email for nurses that were unable to attend the unit meeting. Questions were encouraged and answered. See Appendix D.

Project procedure. The DNP Project was guided by Lewin's Change Model, Imogene King's Theory of Goal Attainment, and the Johns Hopkins Nursing Evidence-Based Practice Model (Lewin, 1952; King, 1981; Johns Hopkins Medicine, n.d.). The DNP Project coordinator attended a unit meeting and discussed the nurse's role in the project and gained feedback from the staff and management. A presentation was given to educate the nurses on pharmacologic and non-pharmacologic constipation prevention measures available to patients upon admission to the postpartum unit. Information about the project was also given in the nursing daily line-up and weekly update to ensure that all staff received the proper education on implementing the project.

Project implementation spanned three-months. During that time, nurses provided written and verbal constipation prevention education to patients and offered laxative therapy within one hour of admission to the unit. Teach-back was utilized to ensure patient understanding. After providing the education, nurses documented completion of the task via a time-stamp intervention in the EMR. After providing the initial education, the nurses addressed constipation prevention and offered pharmacologic therapy at least once per 12 hour shift.

At the end of the three months, data was collected from the EMR regarding administration of PRN laxative medications. The same type of data was collected on qualifying patients from the same three-months from the year prior. The two were compared to establish whether early patient education and offering of laxatives from the nursing staff early in the hospital stay had an effect on the administration of PRN laxative medications.

Ethical considerations. Approval from the hospital's Nursing Research Committee and IRB and the university's Human Subjects Committee was obtained prior to the start of the DNP Project. See Appendix A & B. The research data contains no patient identifiers and will be kept on a password protected computer at the project coordinator's home residence for a minimum of six years.

Conclusions

Clinical outcomes. The independent samples t-test was utilized for data analysis. Statistical difference was found when comparing pre-intervention laxative administration and post-intervention laxative administration. Pre-intervention mean laxative administration was 1.17 doses per patient (n = 524). Post-intervention, mean laxative

administration was 1.37 doses per patient (n = 498). The independent samples t-test was p=<0.021. Statistical significance (p<0.05) was achieved for an increase in PRN laxative administration in the post-intervention sample. See Appendix H. Three hundred-thirteen patients (60%) received at least one dose of a PRN laxative. Two hundred-eleven patients (40%) received no PRN laxative medications and of those, seven patients (1%) had no PRN laxative medications ordered. Three hundred twenty-three patients (65%) received at least one dose of a PRN laxative. One hundred seventy-five patients (35%) received no PRN laxative medications and of those, 20 patients (4%) had no PRN laxative medications ordered. See Appendix G for specific data numbers per type of medication.

Feedback via a Likert-scale questionnaire sent out via email using the Survey Monkey Program was obtained from the nurses after project completion to gain knowledge of success and challenges. Nine of 40 staff members (22%) participated in the survey. See Appendix E for survey results and comments.

Implications for Practice

Early patient education and offering of pharmacological therapy from the nursing staff early in the hospital stay showed a statistically significant increase in the administration of PRN laxative medication. The provision of structured education to the nursing staff about constipation prevention led to an increase in patient education and laxative utilization. By offering laxative medications earlier and more consistently in the hospital stay, there is a better chance of reducing postpartum constipation and the associated discomfort. All staff who offered feedback on the DNP Project felt they were better equipped to prevent postpartum constipation in their patients by providing structured education and consistently offering PRN laxatives.

Barriers/Limitations. The Project relied heavily on nurse implementation. Nurse buy-in was important to ensuring they were motivated to provide the education in a timely manner. The hospital-stay of postpartum patients is relatively short, so finding a measurable outcome that captured the influence of inpatient constipation prevention was difficult. Many women may not have a bowel movement before discharge in relation to the short length of stay. Discovering the influence of scheduled laxative medications on constipation prevention was originally discussed, but changing order-sets was not an option. There are no standing orders for PRN laxative medications, so the nurse is unable to administer the medications if the provider does not place the orders.

Sustainability/Future Projects. Getting management interested in the project early in the process was important for sustainability. Presenting the project findings at a unit meeting and gaining staff feedback about the benefits and challenges also helped with permanent implementation of the change. The constipation prevention education continues to be printed in the welcome packet for all patients leading to sustainability of the project. The addition of standard order sets for laxatives in postpartum patients would ensure that PRN medications are always readily available to the patients. A future project that identifies efficacy of a risk factor identification algorithm and subsequent stepped laxative treatment plan would also be beneficial.

Postpartum constipation is a preventable complication with proper education early in the patient's stay. Prevention of constipation is superior to treatment. The provision of structured education about laxatives, diet, and exercise from the nursing staff increased utilization of PRN laxative medications and may have decreased the prevalence of constipation in the postpartum period.

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Appendix A

University IRB Approval

Amber,

Your DMP project does not meet the Federal definition of research ("a systematic investigation…designed to develop or contribute to generalizable knowledge"). Thus, it does not fall under the Federal policy, or under the purview of the SDSU Human Subjects Committee.

I wish you the best in your project.

Sincerely,
Dianne

Dianne Nagy, Ed.D.
Research Integrity and Compliance Officer
Division of Research and Economic Development
Morrill Hall 200F, Box 2201
Brookings, SD 57007

Appendix B

Facility Approval

Dear Amber Thompson:

Thank you for your submission. I am pleased to inform you the Avera Institutional Review Board (IRB) has reviewed the above-referenced protocol and has made the determination this project meets the criteria for a Quality Improvement Project and does not require IRB review. This project not meet the definition of human research as per 45 CFR 46.102(d) and 45 CFR 164.501, and therefore falls outside the requirement of IRB review.

Thank you for your patience in this process. We wish you great success. Please contact the Avera Institutional Review Board directly at 605-322-4706 if you have any questions.

Regards,

Tammy Hein
IRB Manager

Appendix C

Welcome Packet Education

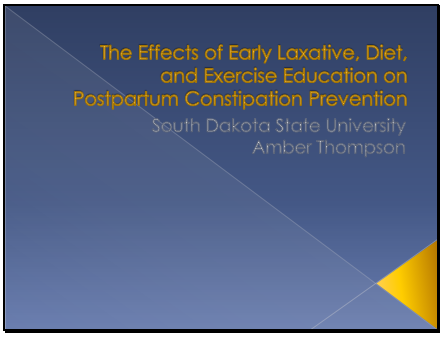
Constipation Prevention

Walk in the hallways as tolerated
Increase water intake to at least 2 liters per day
Increase fiber to (25-30g) per day with intake of fresh fruits and vegetables, whole grains, bran, nuts, beans, and rice
Ask your nurse about available medications to assist with bowel movement
(Shin, Toto, & Shey, 2015)

Appendix D

Staff Nurse Education

Slide 1



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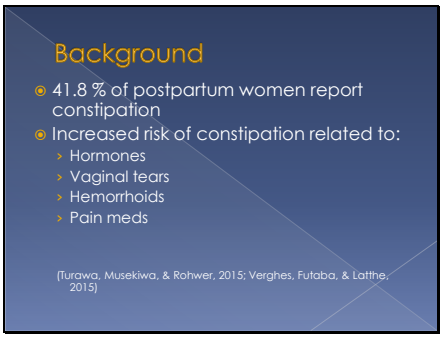

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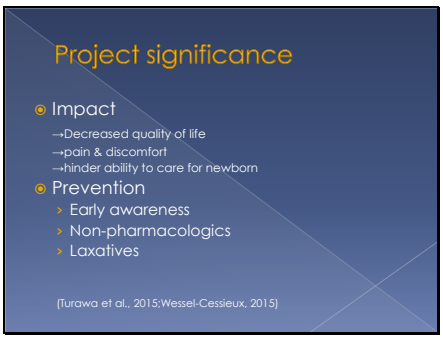

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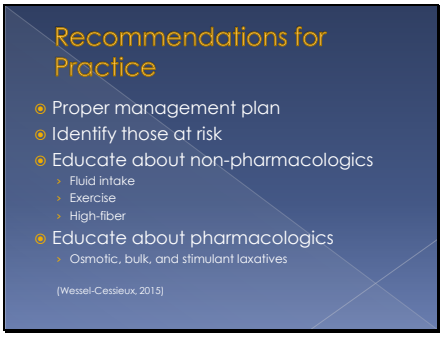

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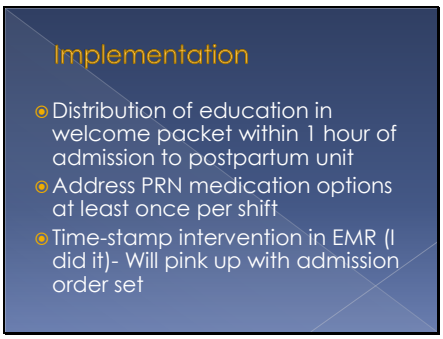

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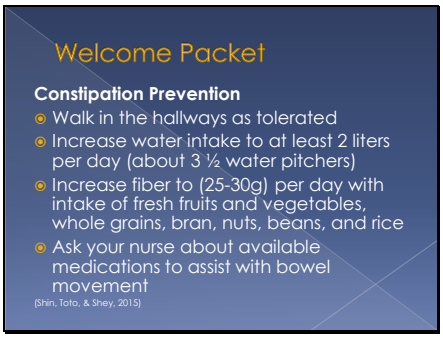

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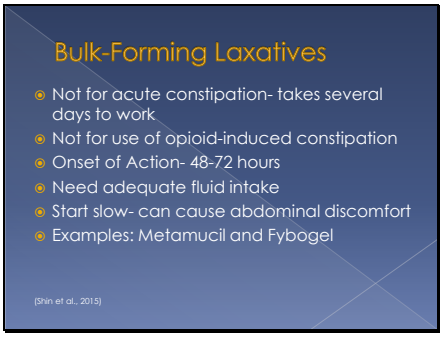

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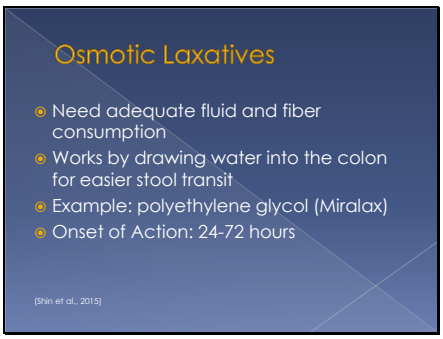

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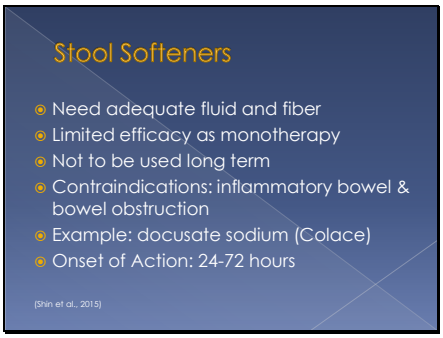

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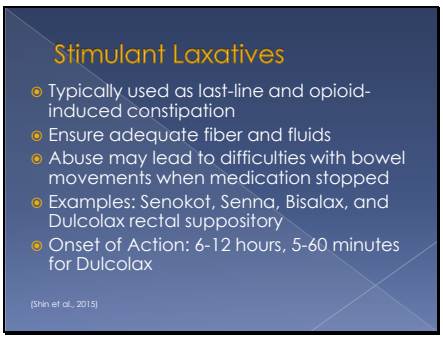

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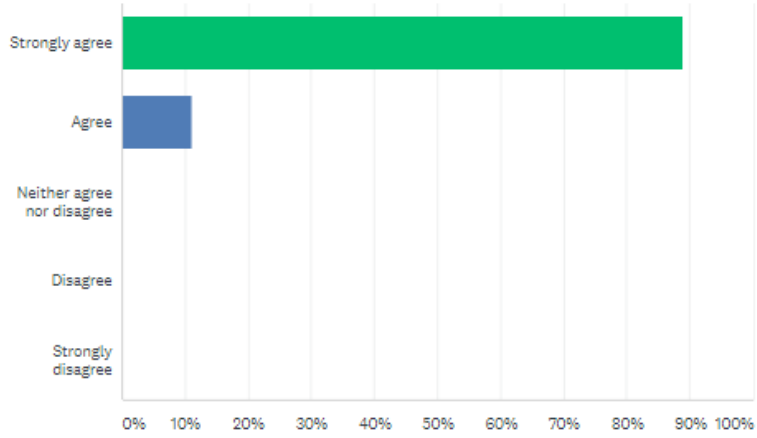
Slide 13

Appendix E

Nurse Feedback Questionnaire

The delivery of constipation prevention education took less than 5 minutes per shift and was not a significant time burden.

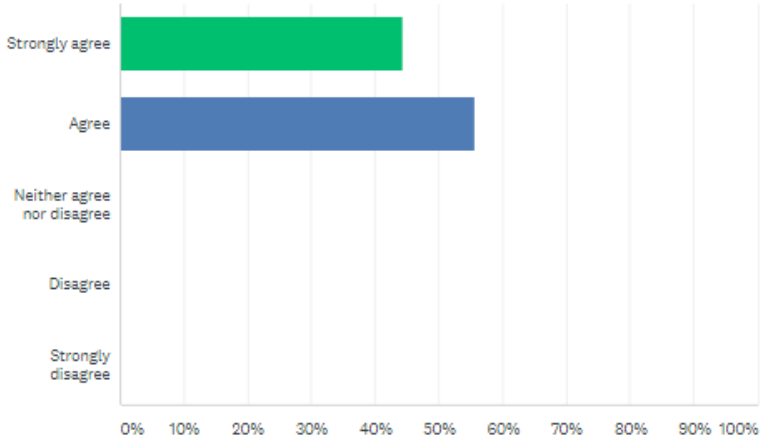
Answered: 9 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly agree	88.89%	8
Agree	11.11%	1
Neither agree nor disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

I feel that I was better equipped to prevent constipation in my patients by providing structured education and consistently offering PRN laxatives.

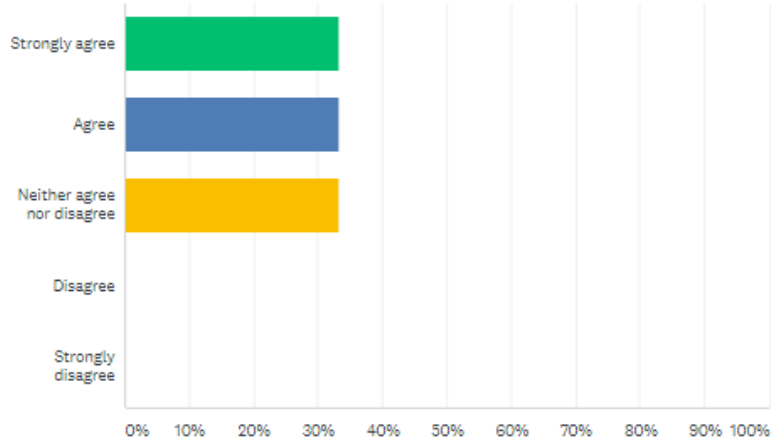
Answered: 9 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly agree	44.44%	4
Agree	55.56%	5
Neither agree nor disagree	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

I offer more PRN laxative medications since the start of the Quality Improvement Project.

Answered: 9 Skipped: 0



ANSWER CHOICES	RESPONSES	
Strongly agree	33.33%	3
Agree	33.33%	3
Neither agree nor disagree	33.33%	3
Disagree	0.00%	0
Strongly disagree	0.00%	0
TOTAL		9

Please provide additional comments about the project.

Answered: 3 Skipped: 6

RESPONSES (3) WORD CLOUD TAGS (0) Sentiments: OFF

Apply to selected Filter by tag Search responses

Showing 3 responses

na

4/12/2019 9:31 PM View respondent's answers Add tags

I am consistent about educating my pt.'s/offering stool softeners,etc. because of it. I have noticed that not all of the providers order any stool softeners/laxative post partum & the RN needing to call for order. It would be helpful for all the provider's order sets to provide these.

4/5/2019 9:59 PM View respondent's answers Add tags

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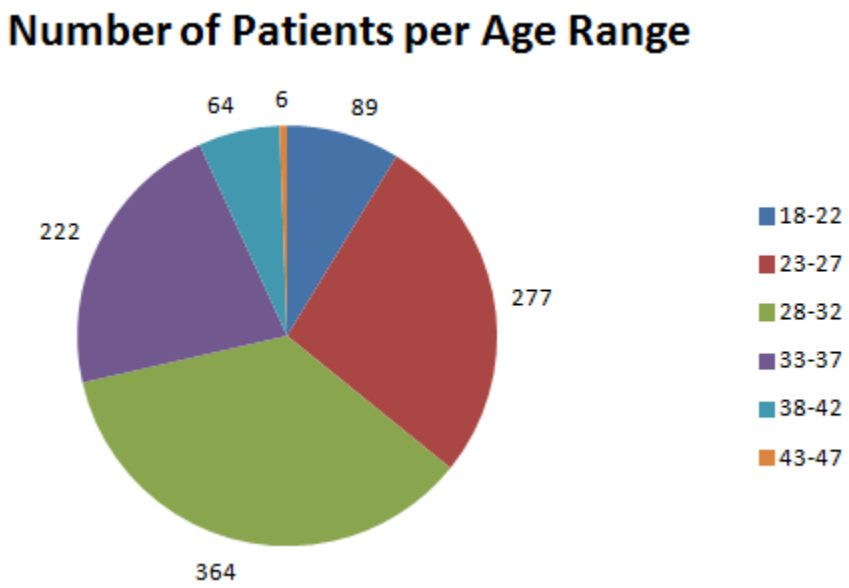
4/5/2019 10:33 AM View respondent's answers Add tags

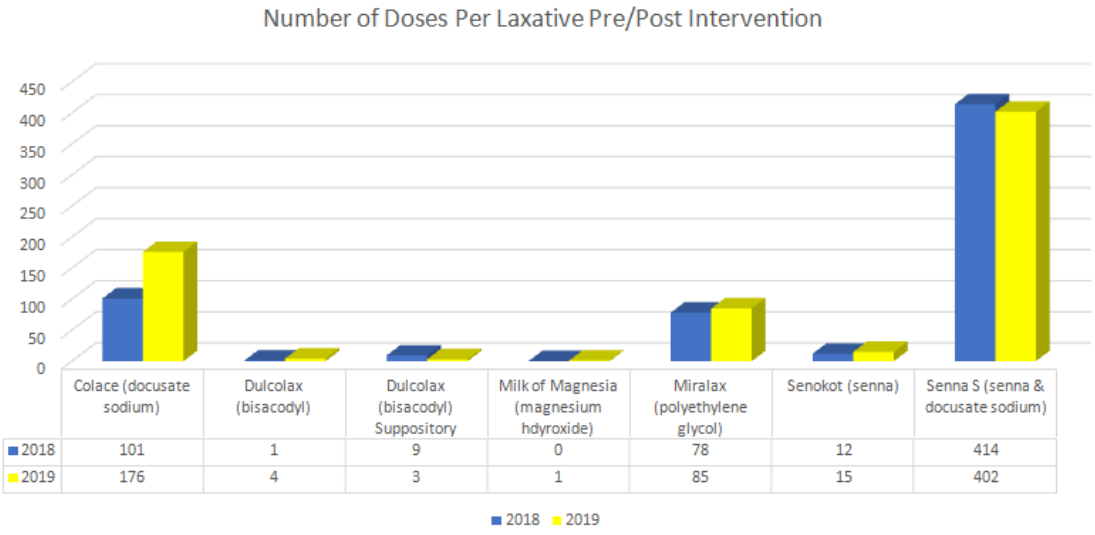
Appendix F

Age Range of Sample



Appendix G

Number of Doses Administered Per Medication



	Colace (docusate sodium)	Dulcolax (bisacodyl)	Dulcolax (bisacodyl) Suppository	Milk of Magnesia (magnesium hdyroxide)	Miralax (polyethylene glycol)	Senokot (senna)	Senna S (senna & docusate sodium)
2018	101	1	9	0	78	12	414
2019	176	4	3	1	85	15	402

Appendix H

Independent Samples t-test

t-Test: Two-Sample Assuming Unequal Variances		
	2018	*2019*
Mean	1.179389	1.375502
Variance	1.723016	1.953282
Observations	524	498
Hypothesized Mean Difference	0	
df	1007	
t Stat	-2.30953	
P(T<=t) one-tail	0.010558	
t Critical one-tail	1.646368	
P(T<=t) two-tail	0.021116	
t Critical two-tail	1.962323	