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Implementation of a Bowel Management Program in Critical Care

Joyce Pittman ■ Terrie Beeson ■ Brandt Carter ■ Collin Terry

ABSTRACT

PURPOSE: The purpose of this study was to examine the effectiveness of a unit-based, educational program on implementation of a sustainable bowel management program in a critical care setting.

SUBJECTS AND SETTING: Two hundred thirty nurses in 6 critical care units within a 750-bed level I trauma hospital and 400-bed university academic teaching hospital participated in the study.

METHODS: Data collection and analysis were guided by a quasi-experimental pre-/postdesign. An evidence-based, interactive Web-based education program was developed. The education program consisted of 3 components: (1) knowledge acquisition (Web-based education module), (2) skill acquisition (unit-based skill session performance and competency), and (3) mastery experiences (self-efficacy). Data collected included pre- and posteducation module test scores, skill-acquisition competency, and self-efficacy scores.

RESULTS: The Web-based education module pre- and posttest scores for 225 participants showed significant ($P < .001$) improvement in knowledge scores. All participants (100%) completed the skill acquisition sessions successfully during the unit-based performance session. Nurses' self-efficacy scores significantly improved ($P < .001$) over the course of this study period. Eighty-six percent (n = 125) of critical care nurses reported enhanced collaboration with the WOC nurses and clinical nurse specialists.

CONCLUSION: Study findings support the use of a structured, evidence-based educational program incorporating a multimethod approach to implement practice change for critical care.

KEY WORDS: Bowel management program, Education method, Critical care, Fecal incontinence.

Introduction

Fecal incontinence in the critical care setting has ramifications affecting the patient, nurse, and healthcare system.[1] Fecal incontinence increases the patient's vulnerability for skin and soft tissue infection, urinary tract infection, and other nosocomial infections. It is a major cause of incontinence-associated dermatitis (IAD) and is associated with pressure ulcer development. Fecal incontinence leads to increased nurse work complexity with frequent unscheduled linen changes, additional cleansing, and dressing changes, resulting in interruption of work flow processes. Financial burdens for the healthcare system is recognized with increased linen usage, patient care supplies, and nursing (labor) cost.[1] Nursing time spent on caring for patients with fecal incontinence can be significant and must be repeated for each incontinent episode, which may occur as often as hourly.

Critical care staff nurses in our organization identified fecal incontinence and IAD as a patient safety and care issue. We measured a 13.5% prevalence of fecal incontinence and a 7.3% prevalence of IAD in our facility. Historically, due to complications arising from the use of internal fecal devices, bowel management methods for patient care were limited to external collection pouches and skin protectants. Therefore, a nurse-driven randomized control trial comparing 3 bowel management methods (usual care, rectal trumpet, and internal fecal catheter device) was conducted.[1] Findings supported all 3 methods as effective methods for managing fecal incontinence; none were associated with adverse events. Critical care nurses who participated in the randomized control trial expressed

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a desire to implement this evidence-based bowel management program into their units, culture, and practice. Nurses often lack the knowledge, skills, and self-efficacy in implementing new procedures into their practice environment. Creative methods for delivering specialty nursing education must be a major focus for progressive healthcare organizations in order to maximize staff development and provide necessary education for bedside nurses. Therefore, a structured, evidence-based bowel management education program was designed to translate this research into practice.

Due to recent healthcare strategies that emphasize reduction of healthcare costs while maintaining quality of care and customer service, downsizing centralized nursing staff development departments has become a national trend. However, the need for specialty and technologically complex education continues to increase, and unit-based education offers a viable solution.[2] Social learning theory and the concept of self-efficacy, developed by Bandura, were used as the underlying framework for this study. Self-efficacy is defined as "the conviction that one can successfully execute the behavior required to produce certain outcomes."[3(p193)] This theory includes mastery experience, vicarious experience, verbal persuasion, and physiological states as critical components that must be addressed in order to promote a feeling of self-efficacy. These components contribute to a person's confidence in the ability to perform a specific task such as implementing a bowel management program.[4]

The primary aim of this study was to examine the effectiveness of a multimethod, unit-based, educational program, implementing a sustainable bowel management program into critical care. This educational program emphasized the development of knowledge, skills, and mastery or self-efficacy related to implementation of a bowel management program. A secondary study aim was to examine collaboration of the critical care nurse with the WOC nurse and the clinical nurse specialist (CNS) related to implementation of the Bowel Management Program.

Methods

We used a quantitative, descriptive design examining the effectiveness of an educational program to implement a bowel management program into critical care. The education program comprised 3 components: (1) knowledge acquisition, (2) skill acquisition, and (3) mastery experiences (self-efficacy).

Two hundred thirty critical care nurses from 4 critical care units at a large teaching healthcare organization in the Midwestern United States were recruited to participate in the study. Inclusion criteria were: (1) RN; (2) employed and working in one of the selected critical care units, and (3) willing to participate in the bowel management educational program. Nurses were provided information via e mail, verbal coaching, and posted flyers regarding the research study, steps to access the Web-based learning modules, complete the unit-based skills acquisition sessions, and complete the self-efficacy surveys. Indiana University Health Institutional Review Board reviewed and approved study procedures prior to data collection.

Study Procedures

The research team collaborated with Indiana University School of Nursing doctoral faculty and Indiana University Health's Instructional Design experts to develop a Web-based interactive, self-paced education module. Superusers (nurses) were identified on each participating unit to facilitate the implementation of the new program into critical care. Direct-care critical care nurses (superusers) were selected because they were early adopters, informal leaders, and change agents on the participating units. The superusers were the first to be invited to participate in the study and to coach the other critical care nursing staff.

Content from the self-paced education module included significance of the problem, options for care, risks and benefits of each bowel management method, contraindications of the invasive methods, a stepwise algorithm for choosing the appropriate method (usual care, rectal trumpet, or internal bowel management catheter), and implementing the protocol and order set. In addition, 2 videos were created demonstrating a step-by-step instruction for placement and care for usual care and the rectal trumpet method. Collaboration with an industry partner provided video of internal fecal catheter device instruction and demonstration for insertion and maintenance. All 3 videos were imbedded in the Web-based module. This Web-based module required the user to interact and complete designed steps in order to proceed through the program. Pre- and posttesting were used to measure knowledge acquisition.

Skills acquisition was accomplished via unit-based, focused group performance sessions. These sessions offered participants the opportunity to practice their skill and technique for each bowel management method on a life-size mannequin. During these sessions, each critical care nurse demonstrated competency in each method and the stepwise algorithm for implementing the appropriate bowel management method. Finally, the mastery component provided a coaching environment for the critical care nurse when implementing the bowel management program into practice. Each unit designated 1 or more superusers to partner with the nurse when implementing the program. Confidence in implementing the bowel management program was measured multiple times: pre- and posteducation module; after the skills acquisition session; and 1 month after unit implementation of the bowel management program using a Web-based self-efficacy survey. Collaboration with WOC nurses and CNS was measured via an online survey 1 month after unit implementation of the program and by tracking the use of the order sets.

TABLE 1.

Data Collection Timeline and Sources

Variables (Measure)	Computerized Learning Module	Focus Group Skill Acquisition Session	One Month Follow-up	Data Source
Demographics	X			Self-report
Knowledge (pre-/posttest)	X			Pre-/posttest
Skill competency		X		Competency verification
Self-efficacy (self-efficacy survey)	X (pre- and postcompletion of Web-based module)	X	X	Self-report
Collaboration with WOC nurse			X	Self-report
Collaboration with CNS			X	Self-report

Data Collection

Data were collected at 3 time points: (1) pre/posttest of the Web-based, interactive self-paced module; (2) completion of unit-based focused group performance skills session, and (3) 1 month after implementation of the Bowel Management Program in the unit (Table 1).

Collaboration among critical care staff, WOC nurse, and CNS was measured by the number of electronic consults to the WOC nurse and CNS, informal and formal communication among these participants, and self-report by the critical care nurse. Implementation of the Bowel Management Program on the unit was measured by the number of electronic Bowel Management Program order sets entered.

Measures

The instruments used in this study included the bowel management self-efficacy scale (Table 2), pre- and posttest

TABLE 2.

Bowel Management Self-efficacy Scale[a]

Bowel Management Methods Education Program Self-Efficacy Scale					
Circle who is completing: 1 = Staff Nurse 2 = CNS 3 = WOC nurse					
Mark an X in the column that indicates how confident you feel in response to each item.	**1: Not Confident**	**2: Slightly Confident**	**3: Fairly Confident**	**4: Highly Confident**	**5: Extremely Confident**
1. I know and understand the information provided in the bowel management education program.					
2. I provide care for patients with fecal incontinence following the bowel management program guidelines.					
3. I prevent my patients from having skin problems related to fecal incontinence.					
4. I have additional evidence-based methods to offer my patients with fecal incontinence.					
5. I determine the appropriate bowel management method for my patient with fecal incontinence.					
6. I identify contraindications for inserting a bowel management device.					
7. I am skilled in inserting a bowel management device if deemed appropriate.					
8. I know *who* my resources are *on my unit* for my patients with fecal incontinence.					
9. I know *who* my resources are *in my facility* for my patients with fecal incontinence					
10. I obtain bowel management supplies on my unit for my patients.					
TOTAL					

[a]Copyright 2013. Indiana University Health.

scores used to measure knowledge, and a skill competency checklist. Demographic items were collected by self-report survey of the critical care nurse. The pre-/posttest were developed from the Web-based, self-paced education module measuring knowledge acquisition of the participants The knowledge test consisted of 20 questions where a single point was assigned for each correct answer. Because no task-specific self-efficacy scale related to bowel management was identified, the investigators developed the self-efficacy scale using the concepts presented by Bandura[3] and items specific to bowel management. Content experts reviewed the questionnaire and recommendations were incorporated into the instrument (Table 2). The Bowel Management Self-efficacy scale consisted of 10 questions scored on a 1 to 5 scale; pre-/postknowledge test total scores ranged from 10 to 50. The competency checklist included successful demonstration and completion of all procedural steps for each bowel management method by the participant. Finally, reports were collected from the electronic medical record documentation system of the number of WOC nurse and CNS referrals and the total number of bowel management order sets used.

Data Analysis

Participants' level of experience and employment duration were summarized using frequency and percentage. Test scores were summarized using mean and standard deviation. Bowel management knowledge scores were compared between pre- and posttesting times using a 2-sided Student *t* test. Nurse efficiency scores were compared across the 4 testing times using analysis of variance and pairwise comparisons between specific testing times were performed using the Tukey multiple comparison procedure with an overall significance level of 0.05. Analyses were performed using the Statistical Package for the Social Sciences version 20 (SPSS, Chicago, Illinois), Microsoft Excel (2007, Redmond, Washington), and Minitab version 14.2 (Minitab Inc, State College, Pennsylvania).

Results

The 230 critical care nurse participants reported a mean of 8 years of experience; almost 35% had 2 or fewer years of experience (Table 3). As noted earlier, our primary aim was to examine the effectiveness of an educational program to implement the Bowel Management Program into practice on the critical care unit. Three different assessments of the bowel management educational program effectiveness were completed to meet this aim: knowledge (pre-/posttest scores); competency (competency skills checklist); and mastery or self-confidence (self-efficacy survey).

The Web-based, education module pre-/posttest scores for 225 participants showed significant improvement ($P < .001$; Table 3). All participants completed the skills acquisition competency successfully during the unit-based, focused performance sessions. The nurses' self-efficacy scores significantly improved ($P < .001$) over the course of this study period (pre-post Web-based module, postskills competency, and 1 month postunit implementation; Table 3, Figure 1).

TABLE 3.

Summary of Bowel Management Education Program Data[a]

Sample Demographics	n	[b]
Experience, t	230	8.1 (9.3)
Experience (groups)	230	[b]
0-2 y		80 (34.8%)
2-5 y		54 (23.5%)
5-10 y		35 (15.2%)
10-20 y		28 (12.2%)
20+ y		33 (14.4%)
IU Health Emp, y	230	5.9 (6.3)
IU Health Emp (groups)	230	[b]
0-1 y		59 (25.7%)
1-5 y		85 (37.0%)
5-10 y		46 (20.0%)
10+ y		40 (17.4%)
Summary of test/survey scores		
Pretest	227	16.0 (1.7)
Posttest	225	19.1 (1.1)
Difference (post-pre)	225	3.1 (1.7)
Survey 1	24	25.2 (10.4)
Survey 2	25	31.8 (10.2)
Survey 3	64	31.2 (10.9)
Survey 4	140	31.1 (9.9)

[a]There is a significant change in test score from pretest to posttest ($P < 0.001$). Mean change with 95% confidence interval: 3.1 (2.9, 3.3).
[b]Data are summarized using mean (SD) or count (%).

Our secondary aim was to examine the collaboration between the critical care nurse, the WOC nurse, and the CNS related to implementation of the Bowel Management Program. Eighty-six percent (n = 125) of participants reported enhanced collaboration with the WOC nurses and CNSs following the educational intervention. More than 300 BMS order sets were used during the study timeframe that consulted the WOC nurse and CNS. In addition, participants reported more informal collaboration at bedside during daily rounds, telephone consultation, and e-mails.

Discussion

This study demonstrates an effective education method for translating research into practice consisting of 3 components: (1) knowledge acquisition, (2) skill acquisition,

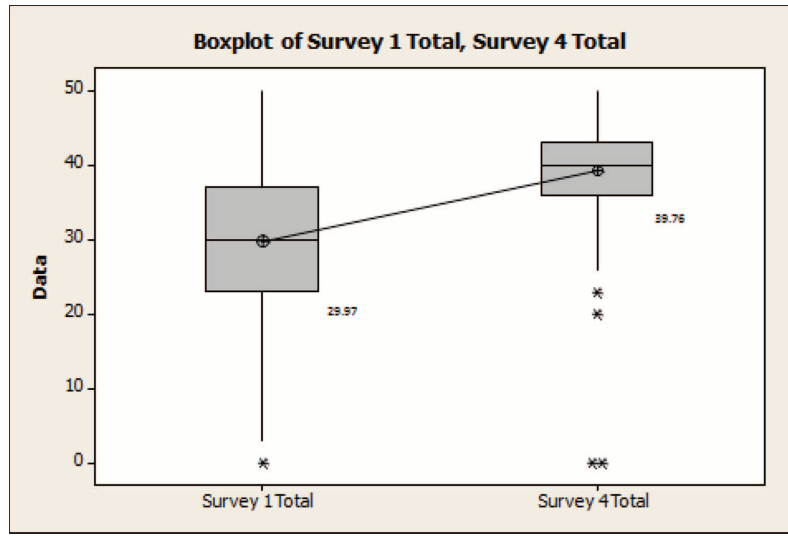

FIGURE 1. Box plot of survey 1 and survey 4.

and (3) mastery experiences (self-efficacy). The benefit of multiple teaching strategies on learning outcomes has been demonstrated in the literature.[5] Active learning (the involvement of the student is encouraged) is more effective and efficient than passive (lecture-style) learning; this technique is postulated to encourage understanding and application, self-direction, collaboration, and critical thinking. These strategies are designed to reinforce instruction by allowing the student to apply the new knowledge. Zapp[5] compared knowledge acquisition and satisfaction of learners in a lecture-style class (control) with another class that used a variety of methods (intervention). Staff who attended a class with a variety of education strategies attained significantly higher scores of knowledge acquisition and satisfaction measurements than staff who received the lecture-only class. The teaching strategies employed in the intervention group included a PowerPoint presentation, a group-discussion exercise, a game method, and a visual display of related equipment.

Other researchers have found that strategies that encourage student participation have positive results on knowledge acquisition and skill mastery.[6,7]. In a study of 11 RNs, Asselin[6] reported that application of knowledge into clinical practice required factual knowledge and instrumental utilization.[6] In another study of 85 nurses, Kang[7] found that significant learning occurred after completion of the self-learning module. The BMS education study confirms the previously mentioned findings supporting the use of a multimethod educational strategy when educating staff.

Titler and colleagues[8] state that the "use of research findings at the point of delivery is central to improve healthcare processes and patient outcomes."[9(p291)] We believe that specific components in the development of our BMS education program were critical to its success. These components included communication and incorporating key opinion holders and change champions (superusers and CNSs) into the education program. We observed that these key stakeholders facilitated staff acceptance and adoption of the practice change.[8] Superusers influenced the adoption of the BMS program through individual coaching, hands-on skills acquisition, and reinforcement. Another important component, as described by Titler and colleagues,[9] was educational outreach or academic detailing. This was accomplished by including topic experts, CNSs, and WOC nurse researchers, at each site who met regularly with staff on the participating units to provide information and feedback. Users of the innovation (superusers) provided encouragement and feedback to the staff on the participating units facilitating the practice change.

In addition to contributing to the body of knowledge regarding multimethod education strategies, this study was the final step of translating science and research related to bowel management into the clinical practice of critical care nurses in a large Mid-western healthcare organization. Critical care nurses identified a problem on their unit, conducted a rigorous, well-designed study to compare bowel management methods, and then developed an evidence-based education program to implement a sustainable practice change. This study is an example of nurses taking the initiative to change practice, exemplifying nurse empowerment in a Magnet organization. Our findings demonstrate a successful and effective multimethod unit-based education program that improves knowledge and competency of the nurse who must use bowel management methods, collaboration among critical care nurses, CNSs, and WOC nurses, and confidence when implementing a bowel management program.

Limitations

Some limitations were noted in this study. First, the use of our electronic education system to collect self-efficacy survey data was troublesome. Integrated stop-gaps in moving through the electronic phases of the program (education

modules, unit-based competency, and self-efficacy surveys) prevented staff from timely completion of data collection. Limited staff completion of the self-efficacy surveys also limited our ability to perform repeated-measures analysis. This may have influenced the postimplementation self-efficacy data. Second, it could be argued that the level of engagement by the superusers may have influenced unit-specific implementation. A strength of this study was that it was direct-care nurse driven. Critical care nurses identified the need and were excited to translate previous research into practice on their unit.

Conclusion

Fecal incontinence and IAD are major concerns in the critical care area because their presence leads to long-reaching consequences and complications. Fecal incontinence presents many challenges to the bedside nurse and the physician as well as the patient. Educational methods used to implement or change practice need to be structured with flexibility for the complexity of the critical care nurse's responsibilities and duties on the unit. In addition, these educational methods need to provide the knowledge, the skills, and opportunity for mastery of the skill set to be integrated into their practice. Multiple options for caring for the patient with persistent fecal incontinence are crucial as the complexity of hospitalized patients increases and regulatory concerns reinforce the need for establishing best-practice guidelines. This education method effectively translated prior nursing bowel management research into the critical care unit. The findings of this study add to the growing body of knowledge regarding best practice for those patients with persistent fecal incontinence in the intensive care unit. Specifically our findings demonstrate an effective unit-based educational method to implement sustainable practice change.

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