Complimentary Therapies for Constipation in Hospitalized Patients:

An Integrative Research Review

Malia A. Hayashida-Knight

The Pennsylvania State University, Altoona

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Constipation is a common problem in hospitalized patients. Lembo and Camilleri (2003) report that it results in 92,000 hospitalizations per year in the United States, and many more patients develop constipation secondary to other problems while in the hospital. There appears to be no precise definition of constipation, as the range of what is normal can vary considerably from person to person. However, guided by the Rome III criteria for diagnosing gastrointestinal disorders, constipation has been roughly understood as comprising at least two of the following: fewer than three bowel movements per week; defecation requiring straining or manual maneuvers at least 25% of the time; lumpy or hard stools at least 25% of the time; abdominal bloating, pain, or nausea at least 25% of the time; or a sensation of incomplete evacuation at least 25% of the time (Ho, Kuhn, & Smith, 2008; Lembo & Camilleri, 2003).

Constipation is a significant source of distress, anxiety, and discomfort for patients. It has been shown to be a factor in increased length of hospital stay, rising healthcare costs, and lower patient satisfaction (Pizzi et al., 2012). If unrecognized or inadequately treated, severe complications—such as paralytic ileus, fecal impaction, bowel obstruction, and intestinal perforation—can result. In the most intractable cases, surgical resection of a portion of the colon is sometimes necessary, often resulting in permanent dependence on a colostomy for ongoing bowel function.

The etiology of constipation is multi-factorial. Commonly, it results from reduced mobility, lack of fiber in the diet, lack of adequate fluid intake, depression and anxiety, or as a side effect of medication (Nathan, 2006; Wondergem, 2005; Zhou, Lin, Lin, Wang, & Zhang, 2010). Medications most often implicated in the problem include opioid analgesics,
antiparkinsonians, antipsychotics, aluminium-containing antacids, antihypertensives, and iron (Nathan, 2006). Other causes of constipation include avoiding or postponing the inclination to stool; uncoordinated straining; and diseases of the bowels (Wondergem, 2005). Although not a causal factor, a positive correlation has been found between advanced age and incidence of constipation (Nathan, 2006). The wide variety of contributing factors makes constipation a complex condition to treat, requiring innovative, multi-dimensional therapeutic interventions.

The traditional medical approach to treating constipation in hospitalized patients involves a heavy reliance on pharmacological remedies such as laxatives, suppositories, and enemas. These treatments have been shown to be highly effective when care is taken to assess the type of constipation present, its etiology, and the most appropriate corresponding medication (Ho, Kuhn, & Smith, 2008). However, while pharmacological interventions serve a purpose in the short-term relief of constipation and a temporary return to normal bowel function, additional interventions exist which have been underutilized in hospital settings. The purpose of this paper is to propose an integrative research review that will critically analyze recent research on complimentary therapies for treating constipation, not as an alternative to pharmacological interventions, but as a supplemental measure.

Organizing Framework

Constipation is defined in the medical literature as a symptom, rather than a disease process in itself (Arce, Ermocilla, & Costa, 2002; Lembo & Camilleri, 2003; Nathan, 2006). The organizing framework for this research will be the theory of unpleasant symptoms. This middle-range nursing theory was introduced as a work-in-progress in 1995 and updated in 1997 as a collaboration of clinical nurse researchers Elizabeth Lenz, Linda Pugh, Renee Milligan, Audrey Gift, and Frederick Suppe. The theory was developed in response to the authors’ observation that
“there are sufficient commonalities among symptoms to warrant a theory that is not limited to [any] one symptom,” and that “some of the same factors may influence the experience of a number of different symptoms” (Lenz, Pugh, Milligan, Gift, & Suppe, 1997, p. 14). The theory of unpleasant symptoms provides a conceptual model for understanding the multidimensional nature of symptoms (see Figure 1). It has been supported with current research on a wide range of symptoms including dyspnea in patients with COPD and heart failure (Huang et al., 2013; Park, Meldrum, & Larson, 2013), fatigue and pain in patients with cancer (Cheng & Yeung, 2013; Thompson, Wilson, James, Symbal, & Izumi, 2013; Xiao, Polomano, & Bruner, 2013), and insomnia in depressed patients (Johnson & Roberson, 2013).

Lenz et al. (1997) argue that the symptom experience consists of three overarching and inter-related realms: (a) influencing factors, (b) symptom characteristics, and (c) consequences. Each of these realms, the authors contend, can be further divided into subsets of phenomena that “relate to one another and interact to influence the symptom experience” (Lenz et al., 1997, p. 18). They describe influencing factors as physiological, psychological and situational. They explain that physiological factors include pathology, trauma, and nutritional balance; psychological factors include mental state, mood, and degree of uncertainty or knowledge of a symptom; and situational factors include social support, lifestyle behaviors, and physical environment. The authors identify symptom characteristics as intensity, timing, distress, and quality. They explain that intensity of a symptom refers to its strength or severity; timing includes both the duration of time that the symptom lasts and the frequency with which it occurs; distress is a subjective measure of the degree of discomfort perceived by the patient; and quality refers to all the adjectives a patient might use to describe a symptom, such as “pounding, throbbing, or flickering” (p. 17). Lenz et al. break down the consequences of symptoms into two
subsets: functional performance and cognitive performance. They explain that functional performance includes physical activity, activities of daily living, social interaction, and role performance; and cognitive performance is the ability to think, concentrate, and problem-solve.

In the theory of unpleasant symptoms, Lenz et al. posit that the three over-arching realms— influencing factors, symptom characteristics, and consequences— have multi-directional and reciprocal relationships. For example, physiological factors such as a diseased bowel or lack of fiber in the diet can interact with psychological factors such as depression and anxiety to cause constipation. The experience of constipation and its associated symptoms (bloating, pain, nausea)
can interfere with an individual’s ability to effectively engage in activities of daily living (dressing, bathing, cooking) and role performance (working, caring for children). These, in turn, may alter situational factors like social support or exacerbate existing psychological factors such as depression. Furthermore, symptom characteristics such as the intensity of the constipation or the amount of distress experienced by the patient may be worsened due to the compounding effect of the aforementioned factors. The theory of unpleasant symptoms demonstrates how symptoms can operate in a cyclical and interactive web of cause and effect.

**Purpose**

For the reasons outlined above, a multi-dimensional and multi-disciplinary treatment approach is needed to effectively address the problem of constipation in hospitalized patients. The purpose of this paper is to propose an integrative research review (IRR) that will critically analyze recent research on complimentary therapies for treating constipation, not as an alternative to pharmacological interventions, but as a supplemental measure. The fundamental question that the IRR will address is: which complimentary therapies show promising application as interventions for constipated patients in hospital settings?

The significance of this kind of study for nursing practice lies in the frequency with which this condition occurs. Constipation is such a pervasive problem that routine hospital nursing assessments include an evaluation of bowel sounds and date of last bowel movement for every patient, regardless of admitting diagnosis. The hospital setting seems to pose inherent threats to bowel function because patient mobility is restricted, constipating medications are numerous, and patient anxiety levels are high due to multiple factors including lack of sleep, interruption of daily routine, and presence of disturbing sensory input. Research is needed to help nurses better understand the range of interventions available for addressing this exceedingly
common problem. In addition, this research will be significant to the discipline of nursing and the future of nursing research in its potential to expand and enhance the middle-range nursing theory of unpleasant symptoms.

Threats to the validity of the IRR will include small sample size, limited staffing, limited funding, and time restrictions. The author anticipates selecting and critiquing 20-25 research studies from within the extensive body of literature on this topic. The research staff will consist of one senior nursing student in The Pennsylvania State University’s (Penn State’s) Second-Degree Bachelor of Science in Nursing Program with consultation and advising provided by a doctorally-prepared nurse educator. Funding for this IRR, including staff and advisor remuneration, library services, tech support, and printing fees, will be limited to a $6,000 federal scholarship. Article identification and data collection will occur over a single semester, with analysis and writing to follow over the course of a subsequent semester. Therefore, the total timeframe for production of this IRR will be one academic year. Despite these limitations, this study represents an important introductory step toward expanding nurses’ access to the existing evidence base on complimentary therapies for treatment of constipation. If this IRR were to be expanded in the future to include additional research, the relationships examined would be considered in light of methodological differences between the studies to strengthen the validity of this review.

**Summary**

The high incidence of constipation in hospitalized patients is a well-documented reality with many inter-related etiologies and complicating factors. It causes considerable distress and discomfort for patients, and if left untreated or inadequately treated for too long can result in injury and disability. The multi-factorial nature of the problem necessitates a multi-dimensional
COMPLIMENTARY THERAPIES FOR CONSTIPATION

treatment paradigm. A strictly pharmacological approach to treating constipation is too narrow and must be expanded to include a variety of therapies that address different aspects of this pervasive patient problem. This proposal is being completed as a capstone project in partial fulfillment of the requirements for a Penn State course titled NURS 200W: Understanding and Applying Nursing Research.

Methodology

Research Design

To gain a more complete understanding of the range of complimentary therapies available to treat constipation, an integrative research review (IRR) will be conducted. An IRR is a type of mixed studies review. Polit and Beck (2012) describe it as a “systematic review that uses disciplined and auditable procedures to integrate and synthesize findings from qualitative, quantitative, and mixed methods studies” (p. 672). “In integrated design, studies are grouped not by method but by findings viewed as answering the same research question” (Polit & Beck, 2012, p. 673). Sandelowski (2007) refers to the IRR research process as “comparability work, whereby reviewers impose similarity and difference on the studies to be reviewed” (p. 236). Jackson (1980) describes the purpose of an integrative review as “synthesizing knowledge from different lines or fields of research…and inferring generalizations about substantive issues from a set of studies directly bearing on those issues” (p. 438). As such, an IRR design makes possible the analysis and comparison of studies representing a broad range of methodologies. Since the goal of this review is to broaden the scope of interventions for constipation, using a flexible research design such as an integrative research review is appropriate.
Sample and Sampling Procedure

The population for this IRR will be published research on complimentary therapies and interventions for patients with constipation. The retrieval process for obtaining a relevant sample will consist of keyword searches using Penn State Library’s LionSearch platform, which provides access to numerous research databases and scholarly journals. Keyword combinations will be used in conjunction with Boolean operators in order to expand and delimit the searches (Polit & Beck, 2012). For example, keywords and phrases utilized will include the following: nursing AND constipation, drug-induced constipation, constipation AND orthopedics, complimentary therapies for constipation, acupuncture AND constipation, abdominal massage AND constipation, hospital-induced constipation, and holistic health AND constipation. Databases consulted will include ProQuest Nursing and Allied Health Journals, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Wiley Online Library, and PubMed of the US National Library of Medicine. In addition, reference lists of articles will be searched to locate additional sources for review. Inclusion criteria will consist of quantitative and qualitative research studies published in peer-reviewed scholarly journals between 2003-2013 related to non-pharmacologic treatments for constipation. In order to obtain a broad range of interventions and clinical perspectives, refereed journals from disciplines other than nursing will be included, such as physical therapy, orthopedics, acupuncture, gastroenterology, and psychology. Exclusion criteria will consist of case reports, newspaper and magazine articles, unpublished manuscripts, books or book chapters, electronic media, and articles published outside the timeframe designated above.
Data Collection

The primary investigator of this IRR will follow Lawrence Ganong’s stages of an integrative research review, which standardizes the data collection process to ensure the same degree of “clarity, rigor, and replication” required of primary research (1987, p. 1, see Table 1). Ganong states that “reviews should be conducted and reported as though they were primary research efforts. The subjects are the studies examined, the methods are the reviewing procedures, the data are the elements of the studies, and the results are the conclusions drawn” (p. 2).

Table 1. Ganong’s Stages of an Integrative Research Review

| • Formulate the review purpose and specify related research question or hypothesis to be tested. |
| • Establish tentative inclusion and exclusion criteria of studies, which may be changed on substantive or methodological grounds as data are gathered. |
| • Conduct a literature review with appropriate sampling decisions for large samples. |
| • Develop a questionnaire with which to gather data |
| • Identify rules of inference for data analysis and interpretation. |
| • Revise criteria for inclusion in the questionnaire as needed. |
| • Read the studies using the questionnaire to gather information. |
| • Analyze data in a systematic fashion. |
| • Discuss and interpret data. |
| • Report the review as clearly and completely as possible. |

Note. Adapted from “Integrative Reviews of Nursing Research,” by L.H. Ganong, 1987, Research in Nursing and Health, 10(1), 1-11. Copyright 1987 by the Wiley Periodicals, Inc.

Ganong describes development of a questionnaire, or data-collection tool, that the researcher would use alongside each study to systematically assemble relevant information. Sparbel and Anderson (2000) provide an example of this type of questionnaire, which they utilized to analyze continuity of patient care in 38 nursing research articles. Using Sparbel’s and Anderson’s questionnaire as a guide, several classes of NURS 200W students at Penn State have developed a data-collection tool, which has been further refined by the author of this proposal for use in this
IRR (see Table 2). Content validity for the data collection instrument will be achieved through consensus with the course instructor and review of the literature. Inter-rater reliability of the tool will be measured through application of the instrument by previous and current NURS 200W students. The primary investigator will independently review the sample for adherence to inclusion and exclusion criteria and guarantee an ethical data collection process.

**Table 2. Complimentary Therapies for Constipation Data-Collection Tool**

| 1. Researchers: | |
| 2. Year of Study: | |
| 3. Country of Origin: | |
| 4. Problem Statement: | |
| 5. Organizing Framework: | |
| 6. Variables: | |
| 7. Purpose of Study: | |
| 8. Research Question or Hypothesis: | |
| 9. Research Design: | |
| 10. Sample Type: | |
| 11. Sample Size: | |
| 12. Instrument Used: | |
| 13. Sampling Procedure: | |
| 14. Validity Addressed (Yes/No): | |
| 15. Reliability Addressed (Yes/No): | |
| 16. Methodological Limitations: | |
| 17. Data Analysis: | |
| 18. Conclusions: | |
| 19. Recommendations: | |


**Data Analysis**

In 1980, Jackson asserted that “one of the widely recognized responsibilities of a researcher is to examine critically all evidence used in his or her research” (p. 443). Analysis is the process by which a reviewer makes inferences and comparisons of the data and carefully synthesizes the evidence such that personal bias does not interfere with the outcome (Jackson, 1980; Whittemore & Knafl, 2005). To that end, this IRR will employ the constant comparison
method, a systematic analytic process described by Whittemore and Knafl (2005). The process will entail four distinct steps: (a) extraction and coding of raw data using the data-collection tool described above, (b) conversion of raw data into a graphic form to facilitate visualization of patterns and relationships, (c) interpretation and inference of themes and patterns, and (d) evaluation and confirmation of the generalizability of inferred themes and patterns, or analysis of conflicting results (Whittemore & Knafl, 2005). Use of this analytical protocol will allow the investigator to compare methodologically diverse studies on multidisciplinary approaches to treating constipation while ensuring rigor, accuracy, and elimination of bias (Whittemore & Knafl, 2005). No data will be excluded from analysis. For quantitative studies, the criteria for determining effectiveness will be a significance level of 0.05 or less for interventions in question. For qualitative studies, effectiveness will be based on thematic analysis of interventions and strategies.

**Sample Critique**

Using an abbreviated version of the sampling process described above, including identified inclusion and exclusion criteria, one research article was selected for preliminary analysis as part of this IRR proposal. During sampling, a number of other pertinent articles were identified, which evaluate interventions such as percutaneous tibial nerve stimulation, abdominal massage, whole body vibration, functional magnetic stimulation, and reflexology for treatment of constipation. The article selected evaluates the effectiveness of administering a bran supplement along with other planned nursing interventions for bowel management of older orthopedic patients with constipation (Kacmaz and Kasikci, 2007). It was decided that Kacmaz’ and Kasikci’s study was a suitable subject to critique in this proposal because it met all of the inclusion criteria and the population studied (older orthopaedic patients) closely matches the
population of interest for this IRR (hospitalized patients). This study presents an excellent example of what the proposed IRR will include.

The study was conducted in a university hospital in Erzurum, Turkey from 2002-2003. The stated purpose was to “evaluate the effectiveness of nursing interventions including bran supplement on the bowel management of older orthopaedic patients” (Kacmaz and Kasikci, 2007, p. 930). The research hypothesis was that the experimental group (i.e., those receiving routine nursing interventions plus bran) would show greater improvement than the control group (i.e., those receiving routine nursing interventions without bran). Kacmaz and Kasikci used a quasi-experimental design with non-random assignment of patients to experimental and control groups.

The article is titled “Effectiveness of Bran Supplement in Older Orthopaedic Patients with Constipation” (Kacmaz and Kasikci, 2007). The independent variable (bran supplement) and the study population (older orthopaedic patients with constipation) are clearly identified in the title. The authors begin with an informative description of the problem of constipation, including prevalence, causal factors, definitions, costs, and physiology. They also provide a concise explanation of the unique challenges of preventing constipation in orthopedic patients. A review of literature on the topic spans the years 1982-2004, with approximately half of the 36 works cited being less than 10 years old. This demonstrates a thorough investigation of existing knowledge and research and ample attention to retrieval of the most up-to-date literature. In addition, the authors point to gaps in the research, specifically stating that there is an insufficient body of research on nursing interventions for constipation and no comparative studies to “determine what constitutes effective treatment” (Kacmaz and Kasikci, 2007, p. 930). This finding further underscores the need for an IRR on this topic.
The independent variable is routine nursing interventions for constipation coupled with administration of a bran supplement. The dependent variable is referred to only generally at first with the use of the conceptual term, “bowel management,” but is further delineated two paragraphs later as “time of defecation, number of defecations, duration of defecation, intensity of faeces, colour of faeces, and amount of faeces” (Kacmaz and Kasikci, 2007, p. 930). Due to the number of dependent variables, the authors’ choice of the blanket term, “bowel management,” for use in the purpose statement is appropriate.

The wording of the research hypothesis lacks clarity due to grammatical structure. The hypothesis reads, “the experimental group would show greater improvement in treatment of constipation problem than the control group” (Kacmaz and Kasikci, 2007, p. 930). This wording makes it sound as though the researchers expect to see improvement in treatment, rather than improvement in symptoms as a result of treatment. However, it is a minor flaw and it can be reasonably understood that the hypothesis predicts a directional relationship between treatment and constipation outcomes.

The design is considered quasi-experimental because patients were non-randomly assigned to the experimental and control groups. The authors state that this was necessary to prevent contamination of the groups; hence, the control group was completed first, followed by the experimental group. Upon review, it seems that further explanation is required to justify this decision. It is not immediately apparent how contamination might occur by treating the control and experimental groups simultaneously. Randomization would significantly increase the rigor of this study. If a study of this nature were to be repeated in the future, every effort should be made to randomize the subjects. In addition, the researcher should be blinded to the intervention to minimize the possibility of bias.
The sample consisted of 60 postoperative patients. Of these, 30 made up the control group that received routine nursing care, and the other 30 made up the experimental group that received planned nursing care including a bran supplement. This is a small sample size and the authors do not mention use of a power analysis. This omission raises questions as to the generalizability of the findings. On the other hand, since the population is limited to elderly orthopedic patients, it is relatively homogeneous, allowing for a smaller sample (Polit & Beck, 2012). If the study were to be repeated, a power analysis should be conducted and a reflective sample size should be obtained to ensure the most accurate results.

In sum, Kacmaz and Kasikci’s study provides a strong basis for further research on use of bran as part of a well-planned protocol for prevention and treatment of constipation. The study should be repeated using randomization, blinding, power analysis, and a larger sample to increase the validity and reliability of the results.

Conclusion

Constipation is a well-documented and significant problem for hospitalized patients. It causes considerable discomfort and can lead to complications such as paralytic ileus if not properly addressed. Nurses must have access to the best available evidence on therapeutic interventions to prevent constipation in their patients, or to effectively compliment pharmacological treatments once it occurs. This proposal is the first step toward the goal of finding and implementing a multi-dimensional and multi-disciplinary treatment approach that addresses the complex range of influencing factors, characteristics, and consequences of constipation (Lenz et al., 1997).

An integrative research review that systematically synthesizes and integrates research findings on this topic from the last ten years is needed (Polit & Beck, 2012). An IRR that abides by the same rigorous standards as primary research will allow for the best possible analysis of
existing data and will be an invaluable resource for nurses as they seek to update hospital
protocols. It will facilitate greater awareness and application of the range of complimentary
therapies available and lay the foundation for ongoing research and promotion of evidence-based
practice.
References


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