Evolution of the Dynamic Symptoms Model

Jeannine M. Brant, PhD, APRN, AOCN®, FAAN, William N. Dudley, PhD, Susan Beck, PhD, APRN, AOCN®, FAAN, and Christine Miaskowski, RN, PhD, FAAN

This article will describe the evolution of the Ideal Symptoms Model, herein called the Dynamic Symptoms Model, and its use to model cancer-related symptoms since its initial publication in 2010. Discussion led to changes within the model to better describe the symptoms experience, its antecedents and consequences, and how interventions affect symptoms. Clinicians and symptom scientists can use the Dynamic Symptoms Model to visualize symptom influences and relationships with other variables over time and to formulate research questions and analytic plans.

Brant is a nurse scientist at the Billings Clinic Hospital in Montana; Dudley is a professor in the School of Health and Human Sciences at the University of North Carolina in Greensboro; Beck is a professor and the Robert S. and Beth M. Carter Endowed Chair in the College of Nursing at the University of Utah in Salt Lake City; and Miaskowski is a professor in the School of Nursing at the University of California, San Francisco.

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Brant can be reached at jbrant@billingsclinic.org, with copy to editor at ONFEditor@ons.org.

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Theories and conceptual models can be thought of as broad nets that attempt to rationalize, explain, and master a phenomenon within clinical nursing and interdisciplinary care. They can be used to guide a review of the literature and to formulate and organize research variables and relationships. Gaps in the literature can be identified and opportunities for additional research revealed (Fawcett, 2005). A variety of symptom models or theories exist, including the Theory of Symptom Management (Dodd et al., 2001), Theory of Unpleasant Symptoms (Lenz, Pugh, Milligan, Gift, & Suppe, 1997), Symptoms Experience Model (Armstrong, 2003), and Symptom Experiences in Time Theory (Henly, Kallas, Klatt, & Swenson, 2003). Most recently, the National Institute of Nursing Research identified a new National Institutes of Health Symptom Science Model to guide symptom science research (Cashion & Grady, 2015).

Brant, Beck, and Miaskowski (2010) compared and contrasted these symptom models and proposed a new Ideal Symptoms Model, herein called the Dynamic Symptoms Model, that could address the complex nature of symptoms, co-occurring symptoms and symptom interactions, and the longitudinal trajectories of symptoms that change over time. Since that initial publication, the authors and other nurse scientists have used the model to conceptualize symptoms and to study the relationships between antecedents, the symptoms experience, nursing interventions that influence the symptoms experience, and the consequences of deleterious symptoms. In addition, Brant has met with nursing doctoral students, symptom scientists, and interdisciplinary team members to discuss the model, refine components of the model, and clarify concepts and relationships within the model. Current literature and the evolution of symptom science have led to changes within the model. The purpose of this article is to discuss the most recent use of the model in oncology research and to further explicate various components within the model.

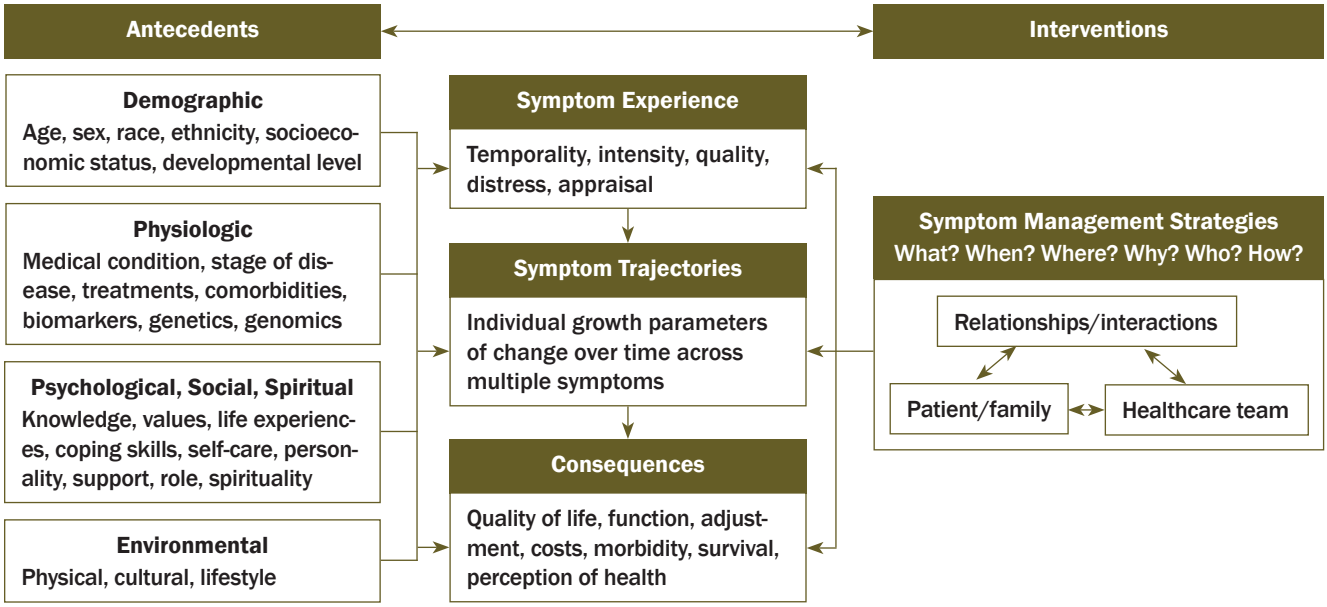
Use of the Dynamic Symptoms Model

This model has received significant attention during the past six years by oncology nurse scientists and doctoral students who need a conceptual model or theory that incorporates changes in the symptoms experience over time. To the authors' knowledge, the model has been cited 34 times, 14 of which were specific to the cancer symptoms experience. The most common use of the model was to inform conceptualization of symptom trajectories (Brant et al., 2011; Henly, Wyman, & Findorff, 2011; Keller, 2015; Pan et al., 2012) or patterns (Haisfield-Wolfe,

Brown, Richardson, & Webster, 2015). Symptom clusters were discussed in two articles (Kim, Barsevick, Beck, & Dudley, 2012; Kim, McDermott, & Barsevick, 2014). Symptom interventions or self-care interventions were the focus of two articles (Alexander, Prabhu Das, & Johnson, 2012; Yeager, 2012). The symptoms discussed included psychological symptoms and their impact on quality of life (Albrecht, 2014; Gosselin, 2012; Matzka et al., 2016), along with physical symptoms, such as neuropathy and diarrhea (Faiman, 2015) and musculoskeletal symptoms (Davis, Carpenter, & Otte, 2016). Cancer types included in these citations were breast, lymphoma, lung, colorectal, multiple myeloma, and leukemia. Finally, a state of the science paper cited the Brant model as a framework for advancing symptom

TABLE 1. Changes to the Dynamic Symptoms Model

Category	Changes	Definition and Comments
Antecedents		
Personal factors	Demographics are further delineated to include age, gender, race/ethnicity, socioeconomic status, and developmental level.	Defined as variables that are inherent to the individual
Physiologic factors	Physiologic factors are expanded to include type of cancer or disease, stage, treatment type, comorbidities, biomarkers of the disease and treatment response, and genetics and genomics.	Defined as the disease and treatment-related factors that give rise to the symptoms experience
Psychological factors	Category was changed to psychological, social, cultural, and spiritual. Expanded factors include knowledge, values, life experiences, coping skills, self-care, support, role, personality, and spirituality.	• Defined as the psychological, social, cultural, and spiritual influences that give rise to the symptoms experience • Renaming the category more clearly reflects the influences of the patient's social system and spiritual beliefs. • The expanded factors provide possible influences of symptoms consistent with current research.
Situational factors	Category changed to environmental, with inclusion of physical, cultural, and lifestyle environmental factors	• Defined as factors within the individual's environment that influence the symptoms experience • Renaming the category to environmental more clearly defines this domain. • Factors provide further context and include the physical and cultural environment and lifestyle habits or factors.
Symptom Experience		
Overarching experience	Appraisal was added to the experience.	The individual's interpretation or appraisal of the symptom can change the overall intensity and distress of the symptoms experience.
Interventions		
Patient/family–nurse/provider interaction	Healthcare team replaced nurse/provider, and relationships were added to the interaction term.	The expansion of the nurse/provider to the healthcare team is more inclusive and better reflects the growing trend toward team-based health care and interventions.
Consequences		
Overarching consequences	Costs, morbidity, and meaning of health were added to the consequences.	• Defined as the distal outcomes of the symptoms experience • Costs are a growing concern in health care and reflect a consequence of uncontrolled symptoms (e.g., resource use). • Morbidity or worsening illness can result from uncontrolled symptoms. • Meaning of health can be interpreted from the symptoms experience (e.g., worsening disease with worsening symptoms). • Meaning of health is a primary component of conceptual models.



Note. Courtesy of Jeannine M. Brant. Used with permission.

FIGURE 1. Revised Dynamic Symptoms Model

science (Davis et al., 2016). Of note, the Dynamic Symptoms Model was cited more often outside of the cancer setting for other chronic disease states (20 citations).

Changes to the Model

Because symptoms experience is complex, a model that illustrates this phenomenon is going to be highly complex to try to capture the longitudinal nature of the symptoms experience and highlight the concepts that give rise to and influence the symptoms experience over time. Initially, variables were laid out in the model in a minimalistic manner and concepts were not elaborated in great detail. For example, antecedents were listed in four categories: demographic, physiologic, psychological, and situational. No further explanation was provided for these antecedents. The symptoms experience, which included timing, distress, intensity, and quality, was found to have missing elements. As for interventions, additional thought was not given to the patient–family and provider–nurse interaction, nor interventions provided by others in the healthcare team. Finally, only four consequences were included in the model: quality of life, survival, function, and adjustment. These gaps in the model leave clinicians or scientists with unanswered questions about the model and leave room for omission and misinterpretation. Additions to the model are included in Table 1, and the newer revised Dynamic Symptoms Model is included in Figure 1. The authors added these descriptors to the model, not to make it more complex, but rather to clarify the meaning and relationships among components of the model and to improve its usability.

Conclusion

Since its inception, the Dynamic Symptoms Model has provided a foundation to discuss symptom science and model changes in symptoms experiences of patients with cancer. As symptom science continues to evolve, dynamic symptoms models to illustrate patients' symptoms experiences will continue to evolve. More models need to be tested and evaluated to identify missing variables and better understand the relationships between and among them, as well as the directionality of these relationships.

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