Chemotherapy-Related Cognitive Change:  
A Principle-Based Concept Analysis

Mary Louise Kanaskie, MS, RN-BC, AOCN®

Chemotherapy agents used in the treatment of malignant diseases cause a variety of side effects, some debilitating and others life-threatening. Change in cognitive function, a side effect of chemotherapy, is not well understood (Schagen, Muller, Boogerd, Mellenbergh, & van Dam, 2006) and is seldom discussed with patients prior to treatment. Although the symptoms are subtle, patients who report those changes are very aware of the differences in their abilities to think clearly (Boehmke & Dickerson, 2005) and commonly use the phrase chemobrain to describe this phenomenon (Staat & Segatore, 2005). Ongoing research suggests that the symptoms of cognitive change make it difficult to carry out normal daily activities in personal and professional life (Boykoff, Moieni, & Subramanian, 2009; Castellon & Ganz, 2009; Jansen, Miaskowski, Dodd, & Dowling, 2005; Mitchell, 2007; Taillibert, Voillery, & Bernard-Marty, 2007).

A clear understanding of cognitive changes following chemotherapy can guide the development of reliable instruments to identify and measure the changes. Understanding the state of the science also is necessary to determine the long-term consequences of cognitive change and its impact on quality of life (QOL). Theoretical insights are needed to identify appropriate research methods for additional scientific inquiry.

Methods

Penrod and Hupcey (2005a) described a principle-based concept analysis to determine the state of the science concerning chemotherapy-related cognitive change. The method is based on four philosophical principles: epistemologic, pragmatic, linguistic, and logical, and includes analysis of the scientific literature to derive a theoretical definition that is closest to the probable truth. The approach enables the researcher to identify gaps and inconsistencies in the state of the science and, subsequently, will lead to advancement of the concept through selection of appropriate research questions and methodologies (Hupcey & Penrod, 2005).

Data Sources

A systematic review of the literature was conducted in June 2010 to determine the use of the concept “chemotherapy-related change in cognitive function.”