

COMMENTARY

# Searching for Simplicity in the Complexity of Symptom Clusters

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Occam's razor proposes that the simplest solution is preferable; however, in the science of cancer and cancer symptoms, simple solutions have been elusive. Understanding individual symptoms continues to confound the science community, and symptom cluster science appears to be an incredibly complex schema of individual symptoms co-occurring and interacting with one another. The simplest explanation for symptom clusters would be a common underlying mechanism at the human genome level. Such a finding could greatly simplify and perhaps revolutionize symptom management.

Occam's razor is a philosophical and scientific principle suggesting that "entities are not to be multiplied beyond necessity" (Duignan, 2017, para. 1) and implying that the simplest solution is preferable. However, simple solutions have been rare in cancer science. The search for symptom science knowledge seems to be a series of ebbs and flows, careening from simple to complex and back to simple again. At each juncture of knowledge development, we suggest that applying Occam's razor to the direction of future research may simply be the best option.

The historic development of cancer knowledge has been eloquently outlined by Mukherjee (2010), who illustrated this ebb and flow. Cancer was initially understood as an abnormal growth cured by simple removal, but because widening surgical margins did not eradicate the disease, cancer became known as a complex array of diseases of different organs. Today, knowledge in genetics, molecular biology, and technology has re-conceptualized cancer more simply as a series of mutations to critical genes that result in the loss of control of three cellular functions: division, maturation, and death. These three functions initially appeared simple, but science has revealed increasing complexity as researchers identified multiple biologic pathways and genetic mutations that act alone and interact within the dynamic epigenetic environment.

Finally, the turn toward individualized treatment in this era of personalized medicine can be conceptualized as a return to a simple N-of-1 approach to cancer care (Blix, 2014; Starkweather et al., 2013).

In "Factors Associated With Poor Sleep in Older Women Diagnosed With Breast Cancer" in the current issue, Overcash, Noonan, Tan, and Patel (2018) draw attention to another evolving knowledge area: the science of cancer symptoms and, specifically, how symptoms cluster among older adults with breast cancer. Driven by their clinical work with older patients with cancer, the frequency of complaints they received about poor sleep, and that "60% of older women diagnosed with breast cancer report poor sleep quality" (p. 359), Overcash et al. (2018) sought to uncover predictors of sleep quality. In their logistic regression model, pain, depression, and fatigue were related to poor sleep, but the model did not reach statistical significance. Their findings align with the psychoneurologic symptom cluster (pain, fatigue, sleep disturbance, and depression), which may be the symptom cluster most frequently reported by cancer survivors (Kwekkeboom, 2016). However, because of the complexity of symptom clusters within the already complex field of gero-oncology, Overcash et al. (2018) concluded that "each symptom is distinct, can behave clinically different, and can require individual management plans" (p. 365), an approach entirely consistent with pre-symptom cluster and current symptom management.

Early nursing research on cancer symptoms was arguably simplistic. Incidence rates, severity, and trajectories of individual symptoms have been described and individually managed (Fu, LeMone, & McDaniel,

**KEYWORDS** Occam's razor; symptom cluster; genetics; genomics  
**ONF**, 45(3), 284–286.  
**DOI** 10.1188/18.ONF.284-286