

A Proposed Theory of Symptom Cluster Management

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Abstract

Background: Symptom cluster management is in its early stages in many chronic and debilitating illnesses. The development of a proposed theory should be an initial step in advancing this area of interest.

Objective: This article presents the development of a Proposed Theory of Symptom Cluster Management.

Methods: The concept analysis, statement synthesis, and theory synthesis by Walker and Avant were used in the development of this proposed theory. A search from July to September 2020 for published empirical and theoretical articles was conducted in scientific databases, expanded on the web, and secondary references from identified articles.

Results: The Proposed Theory of Symptom Cluster Management is both a descriptive and explanatory theory. The defining characteristics of symptom cluster management include the basic and effectiveness components. Antecedents for symptom cluster management include socio-demographic characteristics, symptom cluster characteristics, individual clinical characteristics, individual illness factors, and situational factors or symptom experience. The consequences are clustered as personal-related, health-related, social-related outcomes, and existential outcomes. Measurement tools for the antecedents and outcomes in symptom cluster management and the analytical and statistical strategies were considered. Relational statements were also identified. Theoretical assertions were advanced.

Conclusion: The Proposed Theory of Symptom Cluster Management may provide a holistic approach because it integrates both the symptom cluster and management strategies. The concepts, statements including the complete representation of the proposed theory identified in this article, may provide cues to policymakers and clinical researchers towards the development of tailored interventions and programs.

Keywords

symptom cluster; management; strategies; theory; nursing

In nursing, symptom, along with the sufferings arising from it, had been a significant consideration for early nursing theorists such as Florence Nightingale (Nightingale, 1946). Symptom assessment and management are considered a hallmark of nursing practice (Corwin et al., 2014). Generally, the symptom is a result of perceptions of an abnormal multidimensional state (Wilson & Cleary, 1995) of the individual experiencing it. It is subjective in nature that often affects the bio-psycho-social functioning, sensations, and cognition (Humphreys et al., 2014). The definition of symptom suggests that the emotional, cognitive dimensions (Kilbourne et al., 2001) and the

interpretation of symptom are part of the symptom experience. In addition, the symptom may also exist concurrently with other symptoms known as symptom clusters.

In the development of a framework for symptom cluster management, the concept of symptom cluster should be taken into context. Symptoms have research and policy implications (Rutledge & McGuire, 2004) because often it what brings a patient to the health care system and an indicator of a developing illness (Humphreys et al., 2014). A symptom cluster offers an innovative way to assess and manage symptoms (Kim et al., 2005), and the occurrence

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of symptom clusters may direct the choice of management strategies. The purpose of this article is to present a proposed theory of symptom cluster management for chronic and debilitating illnesses.

There are a few conceptual models and theories that capture the idea of a symptom cluster or multiplicity of symptoms. These are the Theory of Symptom Management (Humphreys et al., 2014), Symptom Experience (Armstrong, 2003), the Theory of Unpleasant Symptoms (Lenz et al., 1997), and the Symptom Experience in Time (Henly et al., 2003). Some of the identified gaps in the current models are the inclusion of underlying mechanisms (Humphreys et al., 2014; Miaskowski et al., 2007) and the vital elements in the description of a symptom cluster (Barsevick et al., 2006). Although these models have been successfully applied and tested, they may be short in terms of considering the factors to management strategies specific to symptom clusters. This may result in reductionism instead of a holistic approach. Although concurrent symptoms are frequently reported in clinical practice, the management of symptom clusters has not reflected this reality.

Methods

The proposed theory for symptom cluster management was developed using the concept analysis, statement synthesis, and theory synthesis by Walker and Avant (2004). A search from July to September 2020 for empirical and theoretical articles using the words “symptom” and “symptom cluster” combined with “management” or “strategies” was conducted. Scientific databases such as Scopus, CINAHL, Science Direct, JSTOR, and Ovid were queried for any related articles. The search was also expanded using the web and secondary references from the identified articles. Articles that reflect the keywords and their derivative terms are read in terms of the context of the abstract.

Concept Analysis

In the development of the concept of symptom cluster management, the seven-step approach of concept analysis by Walker and Avant (2004) was utilized. However, because the purpose of this article is to present a theory, the author omitted the step in identifying a model case, a borderline case, and a contrary case. In this regard, the six steps were followed, which include: 1) Selecting a concept; 2) Determining the aims or purposes of analysis; 3) Identifying all the uses of the concept that can be discovered; 4) Determining the defining attributes; 5) Identifying antecedents and consequences and; 6) Defining the empirical referents.

Statement Synthesis

In the statement development, the literary method of statement synthesis was used. The literary method aims to pull together statements from available research. This method of statement synthesis forms its base from

available research and/or empirical evidence. There are two strategies for a statement synthesis: 1) Make the meaning of the concepts included in a statement to a more universal and; 2) Expand the borders to include a broader and variety of situations (Walker & Avant, 2004).

Theory Synthesis

The theory development follows the theory synthesis. It has three steps which include specifying the focal concept/s, reviewing the literature, and constructing an integrated representation (Walker & Avant, 2004). In the initial step, the identified focal concept for the theory is symptom cluster management. The second step involves combining the relational statements to form a logical theory. In the last step, based on the identified concepts and relationships, an integrated representation of the Proposed Theory of Symptom Cluster Management was created. The illustration is provided in Figure 1.

Discussion

The Proposed Theory of Symptom Cluster Management is both a descriptive and explanatory theory in terms of function. In terms of the level of development, this proposed theory is considered a grand theory because the concepts used are abstract and global in perspective. Assumptions that guided this theory include: 1) Symptom clusters are two, three, or multiple symptoms that occur concurrently and; 2) Symptom clusters are symptoms that can be identified clinically and/or statistically. Theoretical assertions include: 1) Situational factors or symptom experience is a moderating variable to a symptom cluster occurrence that serves as a consideration to management strategies; 2) The effectiveness of symptom cluster management lies in considering both the basic and the effectiveness component. To provide a logical sequence in the development of this theory, the concept analysis, statement synthesis, and theory synthesis will be discussed. Concepts are building blocks of a phenomenon, while statements are relationships, associations, or clarification of a given concept/s. A theory is a logical representation of the concepts and statements of a phenomenon. A theory usually presents a new idea or new insight into the area of interest (Walker & Avant, 2004).

Concept Analysis

A symptom cluster, an assumption of this article, is either two, three, or multiple symptoms that occur concurrently. On the other hand, symptom management can be defined as efforts or strategies to eliminate, avert, delay or minimize the distress brought by the symptom experience (Humphreys et al., 2014). Combining these two terms, therefore, symptom cluster management includes strategies and/or efforts to avert, delay or minimize the overall symptom cluster experience. Based on analysis of literature, symptom cluster management has two components: 1) Basic Components and 2) Effectiveness

Component. The former serves as the primary structure of a symptom cluster management strategy, while the latter serves as an indicator for the delivery, performance, or effectiveness of the management strategy.

Basic components

The basic components of symptom cluster management serve as the basic structure for a symptom cluster management strategy. It includes the purpose, type, nature, and composition of the management strategy.

The *purpose of symptom cluster management* refers to the goal or what the management strategy is trying to achieve. It is geared towards the reduction of the frequency, minimizing the severity, relieving the stress (Portenoy et al., 1994), improving holistic outcomes and the quality of life. The *type of symptom cluster management* refers to the intentional or unintentional inputs of the healthcare provider, the nurse, and the patient or significant other. The types include clinical or nursing management, self-care management, and/or cognitive, behavioral, and environmental changes. Clinical/nursing management covers interventions (Brant et al., 2010) such as cognitive-behavioral interventions (Barsevick et al., 2006; Kwekkeboom et al., 2012), medical therapy (Humphreys et al., 2014), and interventions provided solely or in collaboration with the healthcare provider.

Moreover, self-care management may include self-care strategies (Brant et al., 2010; Henly et al., 2003), complementary therapy, relaxation techniques, or any interventions carried out by the patient and family member (Humphreys et al., 2014). Cognitive, behavioral, or environmental change comes as an indirect result of a certain phenomenon (intentional or unintentional effort), for example, adherence to clinician influences (Brant et al., 2010), health-seeking behavior (Brant et al., 2010; Henly et al., 2003) and alteration of the hospital room, home, or work environment (Humphreys et al., 2014).

The *nature and composition of symptom cluster management* refer to the level of evidence or number of management strategies needed. Symptom cluster management may come as tailored (Skelly et al., 2008), targeted, diverse (Humphreys et al., 2014), or multimodal interventions (Miaskowski et al., 2004).

Effectiveness components

The effectiveness component cluster refers to the aspects that may influence the delivery, performance, and effectiveness of a symptom cluster management strategy. These may include the desirability, dose, temporal dimension, and bio-behavioral mechanisms of symptom cluster management. It was noted that desirability (Donesky-Cuenco et al., 2009) or preference (Kwekkeboom et al., 2012) of the management strategy influence outcomes. In addition, the dosage of the intervention (Humphreys et al., 2014) and the setting of the intervention (Miaskowski et al., 2004), duration (Kwekkeboom et al., 2012) also influence the effectiveness of the symptom cluster management. The bio-behavioral mechanism and the temporal dimension are understood in

relation to symptom cluster management. A symptom cluster may share common biologic mechanisms (Cleeland et al., 2003). Also, the symptom within a cluster may occur in different clusters (Albusoul et al., 2017; Barsevick et al., 2006), thus influencing the choice of symptom cluster management.

Antecedents and Consequences

Antecedents are occurrences or concepts that must take place prior to the occurrence of a certain concept, while the consequences are occurrences or concepts that happen or arise as a result of a given concept (Walker & Avant, 2004).

Antecedents

The antecedent considered for the concept of symptom cluster management is the very occurrence of a symptom cluster. In this regard, symptom clusters should arise before symptom cluster management occurs and is considered. To aid in the understanding of this section, Figure 1 is presented. The identified antecedents for symptom cluster management include socio-demographic characteristics, symptom cluster characteristics, clinical characteristics, individual illness factors, and situational factors or symptom experience.

Socio-demographic characteristics refer to the sociological and demographical characteristics of the individual who develops and may develop symptom clusters. Sociological factors may include socio-economic status (Brant et al., 2010), employment status (Kim et al., 2012), a role, education, sexual preference (Brant et al., 2010), culture (Armstrong, 2003; Brant et al., 2010), and ethnicity (Kwekkeboom et al., 2012). While the demographic factors may include age, gender (Armstrong, 2003; Brant et al., 2010; Kim et al., 2012), marital status (Brant et al., 2010; Kim et al., 2012), and race, significantly associated with symptom cluster membership (Armstrong, 2003; Brant et al., 2010; Devon et al., 2017; Kim et al., 2012).

Clinical Characteristics refer to the current physiological and psychological status or attributes of the individual with symptom cluster. The factors under this concept include the disease type and state (Armstrong, 2003; Brant et al., 2010; Kim et al., 2012), baseline physical performance status, symptom burden (Kim et al., 2012), types of treatments, co-morbid conditions (Brant et al., 2010; Kim et al., 2012) attitude, mental ability, mental illness and developmental stage (Brant et al., 2010).

Individual Illness Factors refer to the previous individual experiences which may influence current symptom cluster experience and management. These may include surgery experience before baseline data (Kim et al., 2012), or past experiences (Brant et al., 2010), health knowledge, values, attitudes, a sense of coherence, self-efficacy, motivation, resiliency, a personal definition of wellness, substance abuse issues (Brant et al., 2010) and genetics (Miaskowski et al., 2007).

Situational Factors or Symptom Experience is defined as the simultaneous reaction to include perception,

evaluation, and response to an alteration in one's feeling (Humphreys et al., 2014) that may be brought by the symptom cluster. Constructs in this concept include symptom assessment, symptom meaning (distress, impact, existential meaning), symptom appraisal (Brant et al., 2010), the perception of the symptoms, self-care strategies (Humphreys et al., 2014), response to self-care, symptom appraisal (Brant et al., 2010), and evaluation of the symptoms (Brant et al., 2010; Humphreys et al., 2014).

Consequences

The consequences of symptom cluster management strategies are collectively described as the symptom status outcome in the Theory of Symptom Management (Humphreys et al., 2014). In this paper, consequences or outcomes are clustered as personal-related, health-related, social-related outcomes, and existential outcomes.

The consequences in *personal-related outcomes* may include self-care ability, quality of life, emotion (Brant et al., 2010; Humphreys et al., 2014), adjustment to illness or adaptive behaviors (Brant et al., 2010), functional status, the quality of life (Dodd et al., 2001; Miaskowski et al., 2004) and alteration in mood (Miaskowski et al., 2004). For *health-related outcomes*, these may include better physical, mental functioning (Humphreys et al., 2014), morbidity (Brant et al., 2010; Humphreys et al., 2014), mortality (Brant et al., 2010; Humphreys et al., 2014; Miaskowski et al., 2004), disease progression (Miaskowski et al., 2004), cognitive factors (Brant et al., 2010), function or functional performance (Armstrong, 2003; Brant et al., 2010; Humphreys et al., 2014; Kim et al., 2012; Lenz et al., 1997), and cognition (Brant et al., 2010; Lenz et al., 1997). Concurrent symptoms or symptom clusters have been used as outcomes themselves (Given et al., 2001).

Moreover, in terms of *social-related outcomes*, these may include outcomes that affect functioning, productivity, and health costs (Humphreys et al., 2014). In addition, self-care costs (Brant et al., 2010), finance (Brant et al., 2010; Humphreys et al., 2014), mortality, and healthcare use (Cheville et al., 2011) were identified to be the outcomes of symptom cluster management. Interestingly symptom experience as a consideration to symptom cluster management may also impact existential concepts such as hope, hopelessness, and death thoughts (Hench et al., 2009).

Empirical Referents

Defining empirical referent is the last step of concept analysis. These are measurements to determine the existence of identified concepts in concept analysis. Although there is no established tool to measure the properties of symptom cluster management, the following empirical referents below are valuable components in measuring the basic and effectiveness components of symptom cluster management because symptom cluster management is often measured in terms of the symptom cluster experience and other identified outcomes. This section will discuss the empirical referents for antecedents

and consequences as well as analytical and statistical strategies.

Empirical referents for antecedents

In terms of measurement tools of the antecedents, socio-demographic characteristics can be measured using a demographic survey (Breland et al., 2015; Kwekkeboom et al., 2012; Uçeyler et al., 2007) either through self-report or medical records (Beddhu et al., 2000). In patients on dialysis, co-morbidity can be measured using the modified Charlson Comorbidity Index (CCI) (Beddhu et al., 2000).

In terms of symptom cluster measurement, the most widely used is the M.D. Anderson Symptom Inventory (MDASI) is used in many studies (Cherwin, 2012) and has been validated in different languages such as Chinese and Filipino versions (Wang et al., 2006; Wang et al., 2004). It can also measure symptom interference using the symptom interference sub-scale (Cleeland et al., 2000). From this questionnaire, symptom concurrence can be measured (Kwekkeboom et al., 2012).

Furthermore, other questionnaires to measure symptom include the Edmonton Symptom Assessment Scale (Cheung et al., 2009), the Memorial Symptom Assessment Scale (MSAS) (Molassiotis et al., 2010), the Symptom Distress Scale (SDS) (Hench et al., 2009), the Functional Assessment of Cancer Therapy–Anemia Scale (FACT-An) (Jarden et al., 2009) and the Medical Research Council Dyspnea Scale (Breland et al., 2015).

In HIV, symptoms are measured using HIV Symptom Index (HIVSI) (Zuniga et al., 2017), HIV (SSC-HIV) (Holzemer et al., 1999), its revised version, the SSC-HIV (Holzemer et al., 2001), Memorial Symptom Assessment Schedule (Namisango et al., 2015), HIV Symptom Experience Assessment Scale (HIV-SEAS), HIV Symptom Manageability Scale (HIV-SMS) (Vincenzi et al., 2009), and Symptom Assessment Scale-Short Form (MSAS-SF) (Moens et al., 2015). In emphysema, the University of California, San Diego, Shortness of Breath Questionnaire (SOBQ) can be used to measure dyspnea (Park & Larson, 2014). In osteoarthritis, the Western Ontario McMaster University Osteoarthritis Index (WOMACTM)–physical function sub-scale is used to measure functional status (Jenkins & McCoy, 2015).

Empirical referents for consequences

Measures for symptom outcomes to measure the onset of symptom and experience is the PTDIQ (perception, timing, distress, intensity, and quality) (Henly et al., 2003). Symptom severity of lung cancer is measured using the Physical Symptom Experience tool (Gift et al., 2004). In terms of fatigue, the level of distress is measured by the General Fatigue Scale (Schwartz & Meek, 1999), physical fatigue using Lee Fatigue Scale (LFS) (Lee et al., 1991), or the Brief Fatigue Inventory (Mendoza et al., 1999). Sleep disturbance or insomnia is measured using the Pittsburgh Sleep Quality Index (Buysse et al., 1989) and General Sleep Disturbance Scale (GSDD) (Miaskowski & Lee, 1999). Pain can be measured using the Brief Pain Inventory (Daut et al., 1983). Depressive symptoms can be

assessed using the Center for Epidemiological Studies-Depression (CES-D) scale (Carpenter et al., 1998).

Moreover, in a broader perspective, QOL is measured using the Functional Assessment of Cancer Therapy Scale (FACT) (Paice, 2004). HRQOL in patients with kidney disease using the KDQOL-S (Hays et al., 1994) and Short Form Health Survey Instrument Version 2 (SF-36 v2) form (Ware et al., 1994). Adherence may also help in the impact evaluation of an intervention on aspects of both symptom experience and symptom outcomes (Humphreys et al., 2014). Concurrent symptoms themselves have been used as predictors of patient outcomes (Given et al., 2001). In HIV, the Karnofsky Performance Scale is used to determine the level of functioning ability (Namisango et al., 2015). Symptom experience can be measured using the HIV Symptom Experience Assessment Scale (HIV-SEAS) and the HIV Symptom Manageability Scale (HIV-SMS) (Vincenzi et al., 2009).

Analytical and Statistical Strategies

In terms of analytical and statistical strategies, cluster analysis is among the technique that forms homogeneous groups within complex among patients (Hermens et al., 2015). Exploratory factor analysis is another method that successfully clustered symptoms (Lee & Jeon, 2015; Taylor et al., 1998). In addition, symptom clusters were identified using latent class analysis (Dirksen et al., 2016), principal component analysis (Zuniga et al., 2017), principal component analysis with varimax rotation (Amro et al., 2014; Sarna & Brecht, 1997), principal component analysis with oblique rotation (Chen & Tseng, 2006) or the

principal axis factor analysis technique with oblimin rotation (Fan et al., 2007).

Further, the analytical strategy is the agglomerative hierarchical method with linking average to identify the clusters (Walsh & Rybicki, 2006), hierarchical cluster analysis in the exploratory secondary analysis (Bender et al., 2005), hierarchical cluster analysis with squared Euclidean distances using Ward's clustering methods based on symptom occurrence (Namisango et al., 2015), hierarchical cluster analysis using Ward's method applying squared Euclidean Distance (Moens et al., 2015). Multilevel modeling was also used to test for alterations over time in HIV-related symptom clusters (Cook et al., 2011) or secondary analysis from previous data sets (Bender et al., 2005; Cook et al., 2011). In osteoarthritis, hierarchical and k-means cluster analyses were used to determine symptom clusters (Jenkins & Mccoy, 2015) and binary exploratory factor analysis with varimax rotation (Bender et al., 2008).

Proposed Theory of Symptom Cluster Management

This section presents the statement and theory development using the literary method of statement synthesis and theory synthesis. Statement synthesis forms its base from available research and/or empirical evidence. Consequently, the theory synthesis outlined by Walker and Avant (2004) consists of three steps: 1) Specifying the focal concept/s; 2) reviewing the literature, and; 3) constructing an integrated representation (Walker & Avant, 2004). The final phase of this article is a presentation of an integrated representation of the theory located in Figure 1.

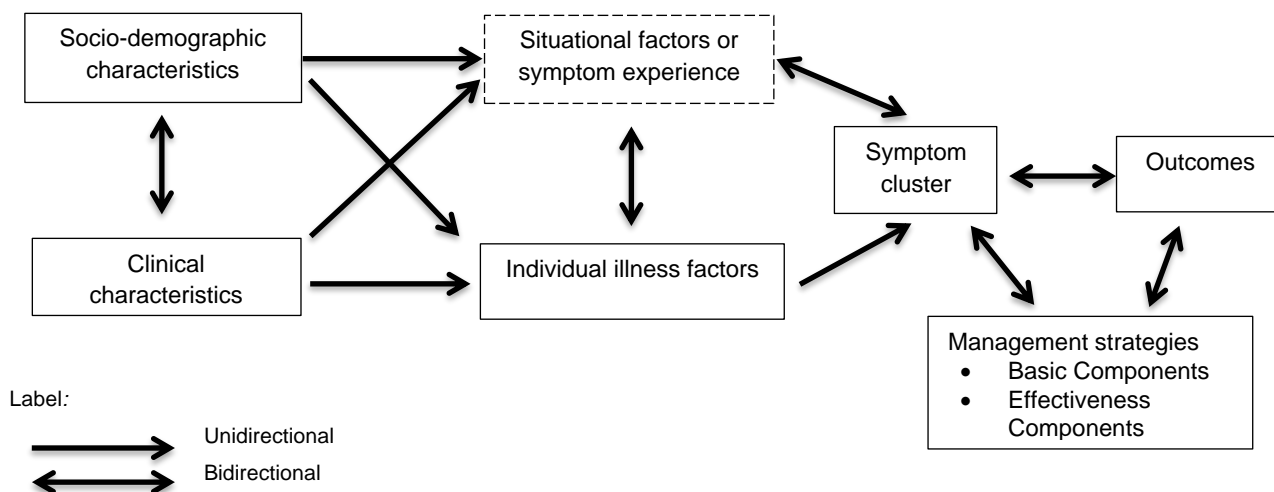


Figure 1 Proposed Theory of Symptom Cluster Management

Statement Synthesis

Relational statements among antecedents vice versa

In a study of fatigue and depression symptom clusters in HIV, the demographic and environmental characteristics show to influence symptom experiences (Voss et al.,

2007). In a study of persons with mild to moderate traumatic brain injury, there is also a variation of symptoms frequency post-injury by age and gender compared to the positive, significant relationship with symptoms and severity and time since injury (Bay & Bergman, 2006). It

was also shown that the frequency of symptoms might influence health-seeking behavior (Humphreys et al., 2014). In addition, in the context of HIV, disease progression reported symptoms increased over time on two of six SSC-HIV symptom clusters (Cook et al., 2011). In heart failure, patients at 75 years and older have significantly less symptom impact compared to the younger age groups, which suggests that age is an important consideration in the assessment of symptom clusters (Jurgens et al., 2009).

Moreover, there are significant levels of depressive symptoms associated with uremic, neuromuscular, and skin clusters in patients on dialysis (Amro et al., 2014). These symptom clusters were initially identified in patients on incident dialysis (Thong et al., 2009). Female patients were likely to have severe symptoms than their male counterparts in the 'energy insufficiency and pain' cluster (Lee & Jeon, 2015). There are also significant associations between a number of demographic and clinical characteristics and Beck Depression Inventory scores (Amro et al., 2014). Interestingly, symptoms clustered differently in a sample of a dual diagnosis HIV and diabetes compared to a sample of previous PLWH patients (Zuniga et al., 2017). Female patients were more likely to experience cluster 1 symptoms in HIV (Namisango et al., 2015).

Relational statements between the symptom cluster management and other concepts vice versa

Management strategies such as changing the environment to improve sleep worked best for parents with low socioeconomic status (Lee & Gay, 2011). Gender-based differences were also found to influence the symptom management strategies (Zimmerman et al., 2011). In addition, the person, health/illness, and environment domains may influence symptom management strategies and ability in heart failure patients (Suwanno et al., 2009). The recognition of a distinct phenotype may also have a role in the modulation of "sickness behavior" in oncology patients and their family caregivers (Illi et al., 2012). Further, the dose and timing of the intervention, frequency and severity of the symptoms, and location of the intervention strategy may also influence the management strategies (Humphreys et al., 2014).

Relational statements between the situational factors or symptom experience and other concepts

Findings from a study suggest a large amount of inter-individual variability of symptom experience in patients on renal dialysis (Killingworth & Van Den Akker, 1996). Woman's symptom experience may also vary by age, reproductive status, genetic risk (Humphreys et al., 2014). In addition, environmental factors such as perceived stress influenced the symptom experience among menopausal women (Nosek et al., 2010). In the same way that there is also inter-individual variability in terms of symptom experience that result in a genetically and biologically determined response in patients with cancer (Kelly et al., 2016).

Relational statements between the consequences and other concepts vice versa

In cancer, the presence of low levels of symptoms in the "all low" group reported had higher Karnofsky Performance Status scores (Miaskowski et al., 2006). It was also hypothesized that advanced disease, poorer functional status, and pain would yield higher scores on the sickness symptom cluster (Chen & Tseng, 2006). In osteoarthritis, there were also significant mean differences in both quality-of-life scores and Western Ontario McMaster University Osteoarthritis Index functional status scores based on the two symptom clusters (Jenkins & Mccoy, 2015).

Furthermore, those who reported depression and anxiety had a poorer quality of life (Utne et al., 2010). There is also a bidirectional relationship between adherence and the symptom experience, symptom management, and symptom outcomes (Donesky et al., 2011). A study in patients undergoing hematopoietic stem cell transplantation found significantly lower symptom severity scores over time in the intervention group compared with the control group for four of the five clusters except for the affective symptom cluster (gastrointestinal, cognitive, functional/pain, and mucositis) (Jarden et al., 2009).

In terms of symptom cluster, the score is significantly lower in patients provided with the psycho-educational intervention (PEI) than in those who received the standard care (Chan et al., 2011). In cancer, severity ratings of pain, fatigue, and sleep disturbance were significantly lowered in the intervention group (patient-controlled cognitive-behavioral) compared to the baseline severity prior to the intervention (Kwekkeboom et al., 2012). Demiralp et al. (2010) also reported significant improvements in fatigue and sleep quality among women with early breast cancer in the intervention group (patients assigned to progressive muscle relaxation).

Theory Synthesis

In this section, the author will lay down the integrated representation of the theory using theory synthesis as the method. Following the three steps of theory synthesis mentioned above, the focal concept of this proposed theory is symptom cluster management. In order to characterize the concept of symptom cluster management, the concept analysis method by Walker and Avant (2004) was used. The concept analysis yields the two components of symptom cluster management: 1) The basic component and; 2) the effectiveness component. The antecedents identified for symptom cluster management are considered in relation to the occurrence of the symptom cluster. Thus, the antecedents identified for symptom cluster management are: 1) Socio-demographic characteristics; 2) clinical characteristics; 3) individual illness characteristics, and; 4) situational factors or symptom experience. The consequences of this theory are clustered as personal-related, health-related, social-related, and existential outcomes. They are identified

because they are direct outcomes of symptom cluster management.

Moreover, to identify the related factors and their relationships, the statement synthesis and in-depth analysis formed the bases of relationships. The socio-demographic characteristics and clinical characteristics have bidirectional relationships. Both antecedents have unidirectional relationships with situational factors or symptom experience and individual illness characteristics. Situational factors or symptom experience and individual illness characteristics have bidirectional relationships; both antecedents have unidirectional relationships with symptom clusters. As noted in Figure 1, situational factors or symptom experience serve as moderating variable to a symptom cluster. It means that it affects the overall perception, interpretation, or meaning of a symptom; in the same way that it affects the perception, interpretation, or meaning of symptom clusters. Finally, symptom cluster, the management strategies, and outcomes have each bidirectional relationship. The success of a symptom cluster management strategy lies in consideration of the basic components, which include the purpose, type, nature, and composition, and the effectiveness components that include the desirability, dose, temporal dimension, and bio-behavioral aspect.

Conclusion

The Proposed Theory of Symptom Cluster Management may provide a holistic approach to understanding both the symptom clusters on one hand and management strategies on the other. The defining characteristics of symptom cluster management which include purpose, type, nature, composition, desirability, dose, temporal dimension, and bio-behavioral aspect, may provide cues for policymakers and clinical researchers towards the development of tailored interventions and programs. This proposed theory then allows the integration of symptom clusters and their management strategies in one framework. It should pave the way for further expansion and exploration of this elusive concept of symptom cluster management. Lastly, although scholars are not in unison in terms of symptom cluster definition, the common ground in further understanding symptom cluster management should be highlighted.

Although this proposed theory is recommended to be tested further, nurses can utilize this proposed theory by looking into the antecedents and consequences of an effective symptom cluster management strategy. Nurses taking care of patients with symptom clusters may also be guided in terms of the factors affecting symptom clusters. The outcomes clustered as personal-related, health-related, social-related outcomes, and existential outcomes, may also provide insights to nurses in planning and evaluating nursing interventions to patients who experience symptom clusters.

Further, this proposed theory is both a descriptive and explanatory theory in terms. It functions to explain the

properties of symptom cluster management, and at the same time, its relationships with other concepts. It is also considered a grand theory because the concepts are abstract and global in perspective. This proposed theory should be tested empirically across cultures and diseases. Although there is not a common definition of a symptom cluster at this moment, one assumption is that symptom clusters are symptoms that may be two, three, or multiple symptoms that occur concurrently. In addition, whether they are clinically or statistically related, the need to develop a proposed theory for symptom cluster management should be given greater value at this time as patients with symptom clusters also experience negative health outcomes and poor quality of life.

Declaration of Conflicting Interest

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Author's Contribution

The author solely conducted this article from conception, design, producing the initial draft, revisions up to the final version of the article. The author agrees to be accountable for all aspects of this work.

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References

- Albusoul, R. M., Berger, A. M., Gay, C. L., Janson, S. L., & Lee, K. A. (2017). Symptom clusters change over time in women receiving adjuvant chemotherapy for breast cancer. *Journal of Pain and Symptom Management*, 53(5), 880-886. <https://doi.org/10.1016/j.jpainsymman.2016.12.332>
- Amro, A., Waldum, B., Dammen, T., Miasowski, C., & Os, I. (2014). Symptom clusters in patients on dialysis and their association with quality-of-life outcomes. *Journal of Renal Care*, 40(1), 23-33. <https://doi.org/10.1111/jorc.12051>
- Armstrong, T. S. (2003). Symptoms experience: A concept analysis. *Oncology Nursing Forum*, 30(4), 601-612. <https://doi.org/10.1188/03.ONF.601-606>
- Barsevick, A. M., Whitmer, K., Nail, L. M., Beck, S. L., & Dudley, W. N. (2006). Symptom cluster research: Conceptual, design, measurement, and analysis issues. *Journal of Pain and Symptom Management*, 31(1), 85-95. <https://doi.org/10.1016/j.jpainsymman.2005.05.015>
- Bay, E., & Bergman, K. (2006). Symptom experience and emotional distress after traumatic brain injury. *Care Management Journals*, 7(1), 3. <https://doi.org/10.1891/cmaj.7.1.3>
- Beddhu, S., Bruns, F. J., Saul, M., Seddon, P., & Zeidel, M. L. (2000). A simple comorbidity scale predicts clinical outcomes

- and costs in dialysis patients. *American Journal of Medicine*, 108(8), 609-613. [https://doi.org/10.1016/s0002-9343\(00\)00371-5](https://doi.org/10.1016/s0002-9343(00)00371-5)
- Bender, C. M., Engberg, S. J., Donovan, H. S., Cohen, S. M., Houze, M. P., Rosenzweig, M. Q., . . . Sereika, S. M. (2008). Symptom clusters in adults with chronic health problems and cancer as a comorbidity. *Oncology Nursing Forum*, 35(1), E1-E11. <https://doi.org/10.1188/08.ONF.E1-E11>
- Bender, C. M., Ergyn, F. S., Rosenzweig, M. Q., Cohen, S. M., & Sereika, S. M. (2005). Symptom clusters in breast cancer across 3 phases of the disease. *Cancer Nursing*, 28(3), 219-225. <https://doi.org/10.1097/00002820-200505000-00011>
- Brant, J. M., Beck, S., & Miaskowski, C. (2010). Building dynamic models and theories to advance the science of symptom management research. *Journal of Advanced Nursing*, 66(1), 228-240. <https://doi.org/10.1111/j.1365-2648.2009.05179.x>
- Breland, J. Y., Hundt, N. E., Barrera, T. L., Mignogna, J., Petersen, N. J., Stanley, M. A., & Cully, J. A. (2015). Identification of anxiety symptom clusters in Patients with COPD: Implications for assessment and treatment. *International Journal of Behavioral Medicine*, 22(5), 590-596. <https://doi.org/10.1007/s12529-014-9450-2>
- Buysse, D. J., Reynolds Iii, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, 28(2), 193-213. [https://doi.org/10.1016/0165-1781\(89\)90047-4](https://doi.org/10.1016/0165-1781(89)90047-4)
- Carpenter, J., Andrykowski, M., Wilson, J., Hall, L., Kay Rayens, M., Sachs, B., & Cunningham, L. (1998). Psychometrics for two short forms of the Center for Epidemiologic Studies-Depression Scale. *Issues in Mental Health Nursing*, 19(5), 481-494. <https://doi.org/10.1080/016128498248917>
- Chan, C. W. H., Richardson, A., & Richardson, J. (2011). Managing symptoms in patients with advanced lung cancer during radiotherapy: Results of a psychoeducational randomized controlled trial. *Journal of Pain and Symptom Management*, 41(2), 347-357. <https://doi.org/10.1016/j.jpain-symman.2010.04.024>
- Chen, M.-L., & Tseng, H.-C. (2006). Symptom clusters in cancer patients. *Supportive Care in Cancer*, 14(8), 825-830. <https://doi.org/10.1007/s00520-006-0019-8>
- Cherwin, C. H. (2012). Gastrointestinal symptom representation in cancer symptom clusters: A synthesis of the literature. *Oncology Nursing Forum*, 39(2), 157-165. <https://doi.org/10.1188/12.Onf.157-165>
- Cheung, W. Y., Le, L. W., & Zimmermann, C. (2009). Symptom clusters in patients with advanced cancers. *Support Care Cancer*, 17(9), 1223-1230. <https://doi.org/10.1007/s00520-009-0577-7>
- Cheville, A. L., Novotny, P. J., Sloan, J. A., Basford, J. R., Wampfler, J. A., Garces, Y. I., . . . Yang, P. (2011). The value of a symptom cluster of fatigue, dyspnea, and cough in predicting clinical outcomes in lung cancer survivors. *Journal of Pain and Symptom Management*, 42(2), 213-221. <https://doi.org/10.1016/j.jpainsymman.2010.11.005>
- Cleeland, C. S., Bennett, G. J., Dantzer, R., Dougherty, P. M., Dunn, A. J., Meyers, C. A., . . . Wang, X. S. (2003). Are the symptoms of cancer and cancer treatment due to a shared biologic mechanism? A cytokine-immunologic model of cancer symptoms. *Cancer: Interdisciplinary International Journal of the American Cancer Society*, 97(11), 2919-2925. <https://doi.org/10.1002/cncr.11382>
- Cleeland, C. S., Mendoza, T. R., Wang, X. S., Chou, C., Harle, M. T., Morrissey, M., & Engstrom, M. C. (2000). Assessing symptom distress in cancer patients: the M.D. Anderson Symptom Inventory. *Cancer*, 89(7), 1634-1646. [https://doi.org/10.1002/1097-0142\(20001001\)89:7<1634::aid-cncr29>3.0.co;2-v](https://doi.org/10.1002/1097-0142(20001001)89:7<1634::aid-cncr29>3.0.co;2-v)
- Cook, P. F., Sousa, K. H., Matthews, E. E., Meek, P. M., & Kwong, J. (2011). Patterns of change in symptom clusters with HIV disease progression. *Journal of Pain and Symptom Management*, 42(1), 12-23. <https://doi.org/10.1016/j.jpain-symman.2010.09.021>
- Corwin, E. J., Berg, J. A., Armstrong, T. S., Dabbs, A. D., Lee, K. A., Meek, P., & Redeker, N. (2014). Envisioning the future in symptom science. *Nursing Outlook*, 62(5), 346-351. <https://doi.org/10.1016/j.outlook.2014.06.006>
- Daut, R. L., Cleeland, C. S., & Flanery, R. C. (1983). Development of the Wisconsin Brief Pain Questionnaire to assess pain in cancer and other diseases. *Pain*, 17(2), 197-210. [https://doi.org/10.1016/0304-3959\(83\)90143-4](https://doi.org/10.1016/0304-3959(83)90143-4)
- Demiralp, M., Oflaz, F., & Komurcu, S. (2010). Effects of relaxation training on sleep quality and fatigue in patients with breast cancer undergoing adjuvant chemotherapy. *Journal of Clinical Nursing*, 19(7-8), 1073-1083. <https://doi.org/10.1111/j.1365-2702.2009.03037.x>
- DeVon, H. A., Vuckovic, K., Ryan, C. J., Barnason, S., Zerwic, J. J., Pozehl, B., . . . Zimmerman, L. (2017). Systematic review of symptom clusters in cardiovascular disease. *European Journal of Cardiovascular Nursing*, 16(1), 6-17. <https://doi.org/10.1177/1474515116642594>
- Dirksen, S. R., Belyea, M. J., Wong, W., & Epstein, D. R. (2016). Transitions in symptom cluster subgroups among men undergoing prostate cancer radiation therapy. *Cancer Nursing*, 39(1), 3-11. <https://doi.org/10.1097/NCC.0000000000000236>
- Dodd, M. J., Miaskowski, C., & Paul, S. M. (2001). Symptom clusters and their effect on the functional status of patients with cancer. *Oncology Nursing Forum*, 28(3), 465-470.
- Donesky, D., Janson, S. L., Nguyen, H. Q., Neuhaus, J., Neilands, T. B., & Carrieri-Kohlman, V. (2011). Determinants of frequency, duration, and continuity of home walking in patients with COPD. *Geriatric Nursing*, 32(3), 178-187. <https://doi.org/10.1016/j.gerinurse.2011.01.011>
- Donesky-Cuenca, D., Nguyen, H. Q., Paul, S., & Carrieri-Kohlman, V. (2009). Yoga therapy decreases dyspnea-related distress and improves functional performance in people with chronic obstructive pulmonary disease: A pilot study. *The Journal of Alternative and Complementary Medicine*, 15(3), 225-234. <https://doi.org/10.1089/acm.2008.0389>
- Fan, G., Filipczak, L., & Chow, E. (2007). Symptom clusters in cancer patients: A review of the literature. *Current Oncology*, 14(5), 173-179. <https://doi.org/10.3747/co.2007.145>
- Gift, A. G., Jablonski, A., Stommel, M., & Given, C. W. (2004). Symptom clusters in elderly patients with lung cancer. *Oncology Nursing Forum*, 31(2), 202-212. <https://doi.org/10.1188/04.ONF.203-212>
- Given, B., Given, C., Azzouz, F., & Stommel, M. (2001). Physical functioning of elderly cancer patients prior to diagnosis and following initial treatment. *Nursing Research*, 50(4), 222-232. <https://doi.org/10.1097/00006199-200107000-00006>
- Hays, R. D., Kallich, J. D., Mapes, D. L., Coons, S. J., & Carter, W. B. (1994). Development of the kidney disease quality of life (KDQOL TM) instrument. *Quality of Life Research*, 3(5), 329-338. <https://doi.org/10.1007/BF00451725>
- Henly, S. J., Kallas, K. D., Klatt, C. M., & Swenson, K. K. (2003). The notion of time in symptom experiences. *Nursing Research*, 52(6), 410-417. <https://doi.org/10.1097/00006199-200311000-00009>

- Henoch, I., Ploner, A., & Tishelman, C. (2009). Increasing stringency in symptom cluster research: A methodological exploration of symptom clusters in patients with inoperable lung cancer. *Oncology Nursing Forum*, 36(6), E282-292. <https://doi.org/10.1188/09.Onf.E283-e292>
- Hermens, D. F., Naismith, S. L., Chitty, K. M., Lee, R. S. C., Tickell, A., Duffy, S. L., . . . Lagopoulos, J. (2015). Cluster analysis reveals abnormal hippocampal neurometabolic profiles in young people with mood disorders. *European Neuropsychopharmacology*, 25(6), 836-845. <https://doi.org/10.1016/j.euroneuro.2015.02.009>
- Holzemer, W. L., Henry, S. B., Nokes, K. M., Corless, I. B., Brown, M. A., Powell-Cope, G. M., . . . Inouye, J. (1999). Validation of the Sign and Symptom Check-List for persons with HIV disease (SSC-HIV). *Journal of Advanced Nursing*, 30(5), 1041-1049. <https://doi.org/10.1046/j.1365-2648.1999.01204.x>
- Holzemer, W. L., Hudson, A., Kirksey, K. M., Hamilton, M. J., & Bakken, S. (2001). The revised sign and symptom check-list for HIV (SSC-HIVrev). *Journal of the Association of Nurses in AIDS Care*, 12(5), 60-70. [https://doi.org/10.1016/S1055-3290\(06\)60263-X](https://doi.org/10.1016/S1055-3290(06)60263-X)
- Humphreys, J., Janson, S., Donesky, D. A., Dracup, K., Lee, K. A., Puntillo, K., . . . Baggott, C. (2014). Theory of symptom management. In M. J. Smith & P. R. Liehr (Eds.), *Middle range theory for nursing* (pp. 141–164). New York: Springer Publishing Company.
- Illi, J., Miaskowski, C., Cooper, B., Levine, J. D., Dunn, L., West, C., . . . Baggott, C. (2012). Association between pro-and anti-inflammatory cytokine genes and a symptom cluster of pain, fatigue, sleep disturbance, and depression. *Cytokine*, 58(3), 437-447. <https://doi.org/10.1016/j.cyto.2012.02.015>
- Jarden, M., Nelausen, K., Hovgaard, D., Boesen, E., & Adamsen, L. (2009). The effect of a multimodal intervention on treatment-related symptoms in patients undergoing hematopoietic stem cell transplantation: A randomized controlled trial. *Journal of Pain and Symptom Management*, 38(2), 174-190. <https://doi.org/10.1016/j.jpainsymman.2008.09.005>
- Jenkins, J. B., & McCoy, T. P. (2015). Symptom clusters, functional status, and quality of life in older adults with osteoarthritis. *Orthopaedic Nursing*, 34(1), 36-42. <https://doi.org/10.1097/NOR.0000000000000112>
- Jurgens, C. Y., Moser, D. K., Armola, R., Carlson, B., Sethares, K., & Riegel, B. (2009). Symptom clusters of heart failure. *Research in Nursing & Health*, 32(5), 551-560. <https://doi.org/10.1002/nur.20343>
- Kelly, D. L., Dickinson, K., Hsiao, C.-P., Lukkahatai, N., Gonzalez-Marrero, V., McCabe, M., & Saligan, L. N. (2016). Biological basis for the clustering of symptoms. *Seminars in Oncology Nursing*, 32(4), 351-360. <https://doi.org/10.1016/j.soncn.2016.08.002>
- Kilbourne, A. M., Justice, A. C., Rabeneck, L., Rodriguez-Barradas, M., & Weissman, S. (2001). General medical and psychiatric comorbidity among HIV-infected veterans in the post-HAART era. *Journal of Clinical Epidemiology*, 54(12), S22-S28. [https://doi.org/10.1016/S0895-4356\(01\)00443-7](https://doi.org/10.1016/S0895-4356(01)00443-7)
- Killingworth, A., & Van Den Akker, O. (1996). The quality of life of renal dialysis patients: trying to find the missing measurement. *International Journal of Nursing Studies*, 33(1), 107-120. [https://doi.org/10.1016/0020-7489\(95\)00040-2](https://doi.org/10.1016/0020-7489(95)00040-2)
- Kim, H.-J., McGuire, D. B., Tulman, L., & Barsevick, A. M. (2005). Symptom clusters: Concept analysis and clinical implications for cancer nursing. *Cancer Nursing*, 28(4), 270-282. <https://doi.org/10.1097/00002820-200507000-00005>
- Kim, H. J., Barsevick, A. M., Beck, S. L., & Dudley, W. (2012). Clinical subgroups of a psychoneurologic symptom cluster in women receiving treatment for breast cancer: A secondary analysis. *Oncology Nursing Forum*, 39(1), E20-30. <https://doi.org/10.1188/12.Onf.E20-e30>
- Kwekkeboom, K. L., Abbott-Anderson, K., Cherwin, C., Roiland, R., Serlin, R. C., & Ward, S. E. (2012). Pilot randomized controlled trial of a patient-controlled cognitive-behavioral intervention for the pain, fatigue, and sleep disturbance symptom cluster in cancer. *Journal of Pain and Symptom Management*, 44(6), 810-822. <https://doi.org/10.1016/j.jpainsymman.2011.12.281>
- Lee, K. A., & Gay, C. L. (2011). Can modifications to the bedroom environment improve the sleep of new parents? Two randomized controlled trials. *Research in Nursing & Health*, 34(1), 7-19. <https://doi.org/10.1002/nur.20413>
- Lee, K. A., Hicks, G., & Nino-Murcia, G. (1991). Validity and reliability of a scale to assess fatigue. *Psychiatry Research*, 36(3), 291-298. [https://doi.org/10.1016/0165-1781\(91\)90027-M](https://doi.org/10.1016/0165-1781(91)90027-M)
- Lee, S. J., & Jeon, J. (2015). Relationship between symptom clusters and quality of life in patients at stages 2 to 4 chronic kidney disease in Korea. *Applied Nursing Research*, 28(4), e13-e19. <https://doi.org/10.1016/j.apnr.2015.03.004>
- Lenz, E. R., Pugh, L. C., Milligan, R. A., Gift, A., & Suppe, F. (1997). The middle-range theory of unpleasant symptoms: An update. *Advances in Nursing Science*, 19(3), 14-27. <https://doi.org/10.1097/00012272-199703000-00003>
- Mendoza, T. R., Wang, X. S., Cleeland, C. S., Morrissey, M., Johnson, B. A., Wendt, J. K., & Huber, S. L. (1999). The rapid assessment of fatigue severity in cancer patients: Use of the Brief Fatigue Inventory. *Cancer*, 85(5), 1186-1196. [https://doi.org/10.1002/\(SICI\)1097-0142\(19990301\)85:5<1186::AID-CNCR24>3.0.CO;2-N](https://doi.org/10.1002/(SICI)1097-0142(19990301)85:5<1186::AID-CNCR24>3.0.CO;2-N)
- Miaskowski, C., Aouizerat, B. E., Dodd, M., & Cooper, B. (2007). Conceptual issues in symptom clusters research and their implications for quality-of-life assessment in patients with cancer. *Journal of the National Cancer Institute Monographs*(37), 39-46. <https://doi.org/10.1093/jncimonographs/lgm003>
- Miaskowski, C., Cooper, B. A., Paul, S. M., Dodd, M., Lee, K., Aouizerat, B. E., . . . Bank, A. (2006). Subgroups of patients with cancer with different symptom experiences and quality-of-life outcomes: A cluster analysis. *Oncology Nursing Forum* 33(5), E79-E89. <https://doi.org/10.1188/06.ONF.E79-E89>
- Miaskowski, C., Dodd, M., & Lee, K. (2004). Symptom clusters: The new frontier in symptom management research. *JNCI Monographs*, 2004(32), 17-21. <https://doi.org/10.1093/jncimonographs/lgh023>
- Miaskowski, C., & Lee, K. A. (1999). Pain, fatigue, and sleep disturbances in oncology outpatients receiving radiation therapy for bone metastasis: A pilot study. *Journal of Pain and Symptom Management*, 17(5), 320-332. [https://doi.org/10.1016/S0885-3924\(99\)00008-1](https://doi.org/10.1016/S0885-3924(99)00008-1)
- Moens, K., Siegert, R. J., Taylor, S., Namisango, E., Harding, R., & Impact, E. (2015). Symptom clusters in people living with HIV attending five palliative care facilities in two sub-Saharan African countries: A hierarchical cluster analysis. *PLoS One*, 10(5), e0126554. <https://doi.org/10.1371/journal.pone.0126554>
- Molassiotis, A., Wengström, Y., & Kearney, N. (2010). Symptom cluster patterns during the first year after diagnosis with cancer. *Journal of Pain and Symptom Management*, 39(5), 847-858. <https://doi.org/10.1016/j.jpainsymman.2009.09.012>

- Namisango, E., Harding, R., Katabira, E. T., Siegert, R. J., Powell, R. A., Atuhaire, L., . . . Taylor, S. (2015). A novel symptom cluster analysis among ambulatory HIV/AIDS patients in Uganda. *AIDS Care*, 27(8), 954-963. <https://doi.org/10.1080/09540121.2015.1020749>
- Nightingale, F. (1946). *Notes on nursing: What it is, and what it is not*. Cambridge: Cambridge University Press.
- Nosek, M., Kennedy, H. P., Beyene, Y., Taylor, D., Gilliss, C., & Lee, K. (2010). The effects of perceived stress and attitudes toward menopause and aging on symptoms of menopause. *Journal of Midwifery & Women's Health*, 55(4), 328-334. <https://doi.org/10.1016/j.jmwh.2009.09.005>
- Paice, J. A. (2004). Assessment of symptom clusters in people with cancer. *JNCI Monographs*, 2004(32), 98-102. <https://doi.org/10.1093/jncimonographs/lgh009>
- Park, S. K., & Larson, J. L. (2014). Symptom cluster, healthcare use and mortality in patients with severe chronic obstructive pulmonary disease. *Journal of Clinical Nursing*, 23(17-18), 2658-2671. <https://doi.org/10.1111/jocn.12526>
- Portenoy, R. K., Thaler, H. T., Kornblith, A. B., Lepore, J. M., Friedlander-Klar, H., Kiyasu, E., . . . Norton, L. (1994). The Memorial Symptom Assessment Scale: An instrument for the evaluation of symptom prevalence, characteristics and distress. *European Journal of Cancer*, 30(9), 1326-1336. [https://doi.org/10.1016/0959-8049\(94\)90182-1](https://doi.org/10.1016/0959-8049(94)90182-1)
- Rutledge, D. M., & McGuire, C. (2004). Evidence-based symptom management. In C. H. Yarbro, M. H. Frogge, & M. Goodman (Eds.), *Cancer Symptom Management* (3rd ed., pp. 3-14). Sudbury: Jones & Bartlett.
- Sarna, L., & Brecht, M.-L. (1997). Dimensions of symptom distress in women with advanced lung cancer: A factor analysis. *Heart & Lung*, 26(1), 23-30. [https://doi.org/10.1016/S0147-9563\(97\)90006-6](https://doi.org/10.1016/S0147-9563(97)90006-6)
- Schwartz, A., & Meek, P. (1999). Additional construct validity of the Schwartz Cancer Fatigue Scale. *Journal of Nursing Measurement*, 7(1), 35-45.
- Skelly, A. H., Leeman, J., Carlson, J., Soward, A. C. M., & Burns, D. (2008). Conceptual model of symptom-focused diabetes care for African Americans. *Journal of Nursing Scholarship*, 40(3), 261-267. <https://doi.org/10.1111/j.1547-5069.2008.00236.x>
- Suwanno, J., Petpichetchian, W., Riegel, B., & Issaramalai, S.-a. (2009). A model predicting health status of patients with heart failure. *Journal of Cardiovascular Nursing*, 24(2), 118-126. <https://doi.org/10.1097/jcn.0b013e318197a75c>
- Taylor, S., Kuch, K., Koch, W. J., Crockett, D. J., & Passey, G. (1998). The structure of posttraumatic stress symptoms. *Journal of Abnormal Psychology*, 107(1), 154-160.
- Thong, M. S. Y., van Dijk, S., Noordzij, M., Boeschoten, E. W., Krediet, R. T., Dekker, F. W., . . . Group, N. S. (2009). Symptom clusters in incident dialysis patients: Associations with clinical variables and quality of life. *Nephrology Dialysis Transplantation*, 24(1), 225-230. <https://doi.org/10.1093/ndt/gfn449>
- Uçeyler, N., Rogausch, J. P., Toyka, K. V., & Sommer, C. (2007). Differential expression of cytokines in painful and painless neuropathies. *Neurology*, 69(1), 42-49. <https://doi.org/10.1212/01.wnl.0000265062.92340.a5>
- Vincenzi, C. B., Moody, K., & Spirig, R. (2009). Development and pretesting of a set of symptom assessment tools in HIV: The HIV Symptom Experience Assessment Scale and the HIV Symptom Manageability Scale. *Applied Nursing Research*, 22(3), 204-210. <https://doi.org/10.1016/j.apnr.2007.10.002>
- Voss, J. G., Portillo, C. J., Holzemer, W. L., & Dodd, M. J. (2007). Symptom cluster of fatigue and depression in HIV/AIDS. *Journal of Prevention & Intervention in the Community*, 33(1-2), 19-34. https://doi.org/10.1300/J005v33n01_03
- Walker, L. O., & Avant, K. C. (2004). *Strategies for theory construction in nursing* (4th ed.). Upper Saddle River New Jersey: Pearson/Prentice Hall.
- Walsh, D., & Rybicki, L. (2006). Symptom clustering in advanced cancer. *Supportive Care in Cancer*, 14(8), 831-836. <https://doi.org/10.1007/s00520-005-0899-z>
- Wang, X. S., Laudico, A. V., Guo, H., Mendoza, T. R., Matsuda, M. L., Yosucico, V. D., . . . Cleeland, C. S. (2006). Filipino version of the M. D. Anderson Symptom Inventory: Validation and multisymptom measurement in cancer patients. *Journal of Pain and Symptom Management*, 31(6), 542-552. <https://doi.org/10.1016/j.jpainsymman.2005.11.011>
- Wang, X. S., Wang, Y., Guo, H., Mendoza, T. R., Hao, X. S., & Cleeland, C. S. (2004). Chinese version of the M. D. Anderson Symptom Inventory: Validation and application of symptom measurement in cancer patients. *Cancer*, 101(8), 1890-1901. <https://doi.org/10.1002/cncr.20448>
- Ware, J. E., Kosinski, M., & Keller, S. (1994). *SF-36 physical and mental health summary scales: A user's manual*. Boston, MA: Health Assessment Lab. New England Medical Center.
- Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life: A conceptual model of patient outcomes. *JAMA*, 273(1), 59-65. <https://doi.org/10.1001/jama.1995.03520250075037>
- Zimmerman, L., Barnason, S., Hertzog, M., Young, L., Nieveen, J., Schulz, P., & Tu, C. (2011). Gender differences in recovery outcomes after an early recovery symptom management intervention. *Heart & Lung*, 40(5), 429-439. <https://doi.org/10.1016/j.hrtlng.2010.07.018>
- Zuniga, J. A., Bose, E., Park, J., Lapiz-Bluhm, M. D., & García, A. A. (2017). Diabetes changes symptoms cluster patterns in persons living with HIV. *Journal of the Association of Nurses in AIDS Care*, 28(6), 888-896. <https://doi.org/10.1016/j.jana.2017.07.004>

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