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An Integrative Review of Symptom Clusters Based on the Dynamic Symptom Model

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Background: Patients experience a variety of symptoms which are inter-related and may increase the severity or intensity of each symptom. Therefore, there have been a lot of studies investigating symptom clusters. Models or theories regarding symptoms have been introduced and developed over time from Theory of Unpleasant Symptoms as middle range theory (1997) to the Dynamic Symptoms Model (2010). The Dynamic Symptoms Model consists of the symptoms experience, its antecedents and consequences, and how interventions affect symptoms, which could present comprehensive view about symptom clusters. As for the Dynamic Symptoms Model, it could address the complex nature of symptoms, co-occurring symptoms and symptom interactions, and the longitudinal trajectories of symptoms that change over time. Some theories are suggested and there are abound studies about symptom clusters. However, it has been limited to comprehensive review for the studies regarding symptom clusters, conducted over the globe. Moreover, there is currently no theory-based intervention for symptom clusters or integrative review of symptom clusters, especially in Korea.

Purpose: This integrative review is 1) to determine what is known about symptom clusters in regard to symptom experience and symptom trajectories, 2) to summarize the current state of the symptom cluster literature, and 3) make recommendations for clinical practice and future study of symptom clusters.

Methods: Following the integrative review methodology outlined by Whittemore and Knafl, the search was conducted to identify relevant articles published by 31 March 2018. The following electronic databases were used: Korean Medical Database (KMbase), Research Information Sharing Service (RISS) and Korean Studies Information Service System (KISS) database. Key search terms included “symptom” in combination with “cluster”, “group”, or “cluster analysis”. We independently screened publications using the following inclusion criteria: 1) reporting symptom clusters in Korea 2) peer-reviewed 3) published in Korea. Following screening, we extracted data characteristics from each study: study design, sample characteristics, assessment methods of symptom, analytic methods and main findings. Finally, the symptom dimension concept proposed by the Dynamic Symptom Model was used in framing our first aim in this integrative review.

Results: Thirteen studies fulfilled the inclusion criteria. All studies were data-based, quantitative and descriptive in nature which were published after 2008. The primary aim of extracted studies was to identify patients’ symptoms, categorize them into specific clusters and determine their relationship with other factors. Nine studies preferred cluster analysis including hierarchical, K-means, or latent class analytic strategies to determine symptom clusters, and among those, factor analysis was used along with cluster analysis in 4 studies. Majority of participants in the study were having cancer (7) and each 3 studies included female only participants or participants in acute stage of disease. The sample size varied between 72 and 1442. Among patients in all studies, commonly experienced symptom clusters were in order: pain, emotional distress (anxiety, depression, or mood fluctuation), and gastrointestinal symptoms. When it comes to framing in the Dynamic Symptom Model, there was no studies that fully met the concept of model. There was one study which totally did not satisfy the Dynamic Symptom Model at all, only one included the concept of time (e.g., symptom trajectory) and 3 studies tried to determine the
internal or intra-relationship of symptom clusters. Most studies investigated which antecedents were related to the symptom clusters and which clusters influenced the consequences. In terms of symptom experience, characteristics were varied in each study. Most studies show the severity, frequency or intensity of symptoms and only one tried to determine the pattern of symptoms as symptom trajectories. According to studies, demographic (age, gender, education, marital status, income), physiologic, psychological (anxiety, depression), and environmental (exercise) factors had influenced on symptom clusters and symptoms had impact on mortality, quality of life, and physical, social, emotional and cognitive functions as the consequences.

**Conclusion:** Through this integrative review, no studies regarding symptom clusters could explain comprehensively. Therefore, symptom clusters have great potential to become a crucial field of study. Additional longitudinal studies are required to assess symptom trajectories, rather than each specific symptom, based on the Dynamic Symptom Model. Furthermore, theory-based intervention studies are needed to develop specific strategies to manage symptom clusters and to examine the effects of those interventions on symptom clusters. In turn, a theory or a model would be applied to guide clinical practice for relieving a variety of symptoms and better quality of life.

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**Title:**
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**Keywords:**
Dynamic Symptoms Model, Symptom clusters and integrative review

**References:**


Abstract Summary:
Based on theory (Dynamic Symptoms Model), this integrative review of symptom clusters has purpose to determine what is known about symptom clusters, to summarize the current state of literatures, and to make recommendations for clinical practice and future study of symptom clusters.

Content Outline:
I. Introduction

A. Patients experience a variety of symptoms which are inter-related and may increase the severity or intensity of each symptom

B. No comprehensive review for the studies regarding symptom clusters

II. Body

A. Aim

1. To determine what is known about symptom clusters
2. To summarize the current state of the symptom cluster literature

3. To make recommendations for clinical practice and future study

B. Method

1. Methodology outlined by Whittemore and Knafl

2. Research articles published by 31 March 2018 based on electronic databases

3. Key search terms: "symptom", "cluster", "group", "cluster analysis"

4. Use the Dynamic Symptom Model to organize literature

C. Results

1. 13 studies fulfilled the criteria.

2. Most studies preferred cluster analysis.

   a) 9 of 13 studies preferred cluster analysis including hierarchical, K-means, or latent class analytic strategies.

   b) 4 used factor analysis with cluster analysis.

3. Majority of participants were having cancer.

   a) Patients in 7 studies were having cancer.

   b) Each of 3 studies included female only and patients in acute stage of disease.

4. Common experienced symptom: pain, emotional distress, gastrointestinal symptoms

5. No studies fully met the concept of Dynamic Symptoms Model.

   a) 1 included the concept of time (symptom trajectory).

   b) 3 tried to determine relationship of symptom clusters.

   c) Antecedents (demographic, physiologic, psychological, environmental factor) had influenced on symptom clusters.

   d) Symptoms had impact on mortality, quality of life, and physical, social, emotional and cognitive functions as the consequences.

III. Conclusion

A. No studies regarding symptom clusters could explain comprehensively.

B. Additional longitudinal studies and theory-based intervention studies are needed.
C. A theory or a model would be applied to guide clinical practice for relieving patients’ symptoms.

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