Symptom Cluster Model for People with Advance Stages of Chronic Kidney Disease

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Symptom Burden in Chronic Kidney Disease (CKD)

- \( \approx 500 \) million individuals have CKD (Mills et al., 2015)

- living with CKD is associated with high symptom burden, up to 20 symptoms (Murtagh et al., 2007; Almutary, Bonner, Douglas, 2013)
Symptom can occur alone or with multiple other symptoms (Lenz et al., 2014)

Cluster of Symptoms

Two or more symptoms that occur together, are stable and relatively independent of other clusters. Symptoms in a cluster may or may not share the same aetiology (Kim et al., 2005)
Previously, we assessed 32 symptoms in patients with advanced CKD (stage 4 and 5) (Almutary et al., 2016).

All symptom dimensions were assessed (occurrence, severity, distress and frequency).
<table>
<thead>
<tr>
<th>Cluster</th>
<th>Core Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluid volume symptoms</strong></td>
<td>Cough</td>
</tr>
<tr>
<td></td>
<td>Shortness of breath</td>
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<tr>
<td></td>
<td>Chest pain</td>
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<tr>
<td></td>
<td>Light headedness or dizziness</td>
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<tr>
<td></td>
<td>Difficulty concentrating</td>
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<tr>
<td><strong>Neuromuscular symptoms</strong></td>
<td>Muscle soreness</td>
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<tr>
<td></td>
<td>Numbness or tingling in feet</td>
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<tr>
<td><strong>Sexual symptoms</strong></td>
<td>Decreased interest in sex</td>
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<tr>
<td></td>
<td>Difficulty becoming sexually aroused</td>
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<tr>
<td><strong>Psychological symptoms</strong></td>
<td>Feeling anxious</td>
</tr>
<tr>
<td></td>
<td>Worrying</td>
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<tr>
<td></td>
<td>Feeling sad</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
</tr>
<tr>
<td></td>
<td>Feeling nervous</td>
</tr>
<tr>
<td><strong>Gastrointestinal symptoms</strong></td>
<td>Vomiting</td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
</tr>
</tbody>
</table>

Pattern and structural cut-off > 0.50
Interconnecting symptoms

A

1. Fluid volume symptom cluster
2. Neuromuscular symptom cluster
3. Gastrointestinal symptom cluster
4. Sexual symptom cluster
5. Psychological symptom cluster

B

Fatigue

1
5
4
3
2

Restless legs
Sleep disturbance

1. Fluid volume symptom cluster
2. Neuromuscular symptom cluster
3. Gastrointestinal symptom cluster
4. Sexual symptom cluster
5. Psychological symptom cluster
Yet, little is known about relationships between symptom clusters, predictors, and the synergistic effect of multiple symptoms on outcomes.
Theory of Unpleasant Symptoms (TOUS)

(Lenz & Pugh, 2014)
Current study

This study builds on our previous work that identified symptom clusters in CKD to represent the latent construct of symptom experience in the hypothesized model (Almutary et al., 2016).
Methods

• Structural equation modeling (SEM) with cross-sectional data was used to test the hypothesized model.
• 436 CKD patients from 3 hospitals

Inclusion criteria

- Adults (≥18 years),
- Diagnosed with CKD (eGFR <30 mls/min/m²)
- Willing to participate & able to provide consent
- Able to communicate in Arabic
• Structural equation modeling (SEM) with maximum likelihood estimation used to test the hypothesized model

• *Criteria used to appraise the model were*
  
  - model fit indices
  
  - magnitude
  
  - direction of path estimates *(Hair et al., 2014, Kline, 2015)*
Symptoms Predicting Quality of Life in CKD

- Fluid volume
- Sexual
- Gastrointestinal
- Neuromuscular
- Fatigue
- Restless legs
- Sleep disturbance

QOL

MCS

PCS

e1

e2
Discussion

• First study to develop a symptom cluster model for patients with advanced stages of CKD.

• Conceptualizing individual symptoms as clusters within a biopsychosocial framework.
Discussion

• The model will also enable nurses to design interventions in a way that takes into account the multidimensional and interactive nature of symptoms, influencing factors and consequences, thereby enabling a person-centred treatment to be provided to our patients.
Discussion

• The model also points to key psychological and physiological contributors to the symptom experience.
• The model explained both the high symptom burden and high impairment of QOL in advanced CKD
• Interventions targeting symptom clusters could greatly improve quality of life in CKD patients.
• Some symptoms deserve routine focused assessment – e.g. fatigue
Platform for Further Research

✓ Some potentially important influencing factors warrant future research (*e.g.* social support and spiritual beliefs).

✓ Further studies to validate these findings are required that specifically focus on older patients with multiple comorbid conditions.
More Information


Thanks for your attention! Any questions?