

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

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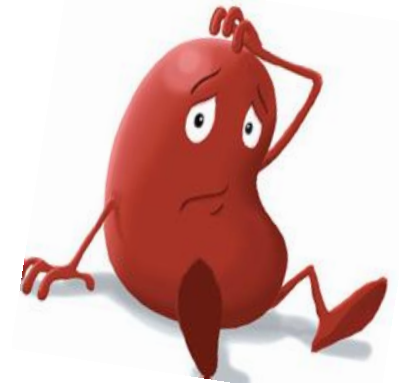
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# Symptom Burden in Chronic Kidney Disease (CKD)

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- $\approx$  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**

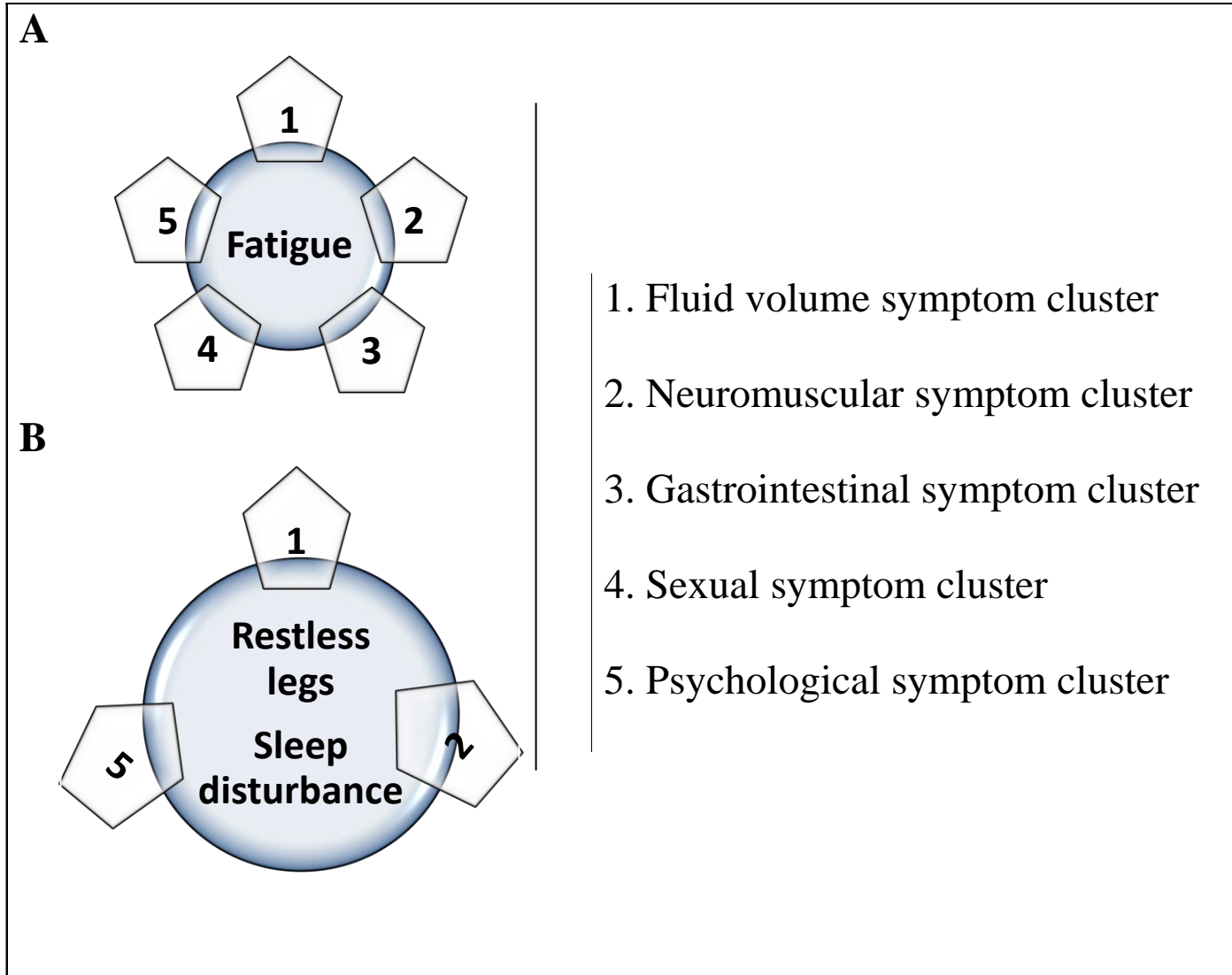
Two or more symptoms that occur together, are stable and relatively independent of other clusters. Symptoms in a cluster may or may not share the same aetiology (Kim et al., 2005)

- 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).

Cluster	Core Symptoms
<b>Fluid volume symptoms</b>	Cough
	Shortness of breath
	Chest pain
	Light headedness or dizziness
	Difficulty concentrating
<b>Neuromuscular symptoms</b>	Muscle soreness
	Numbness or tingling in feet
<b>Sexual symptoms</b>	Decreased interest in sex
	Difficulty becoming sexually aroused
<b>Psychological symptoms</b>	Feeling anxious
	Worrying
	Feeling sad
	Depression
	Feeling nervous
<b>Gastrointestinal symptoms</b>	Vomiting
	Nausea

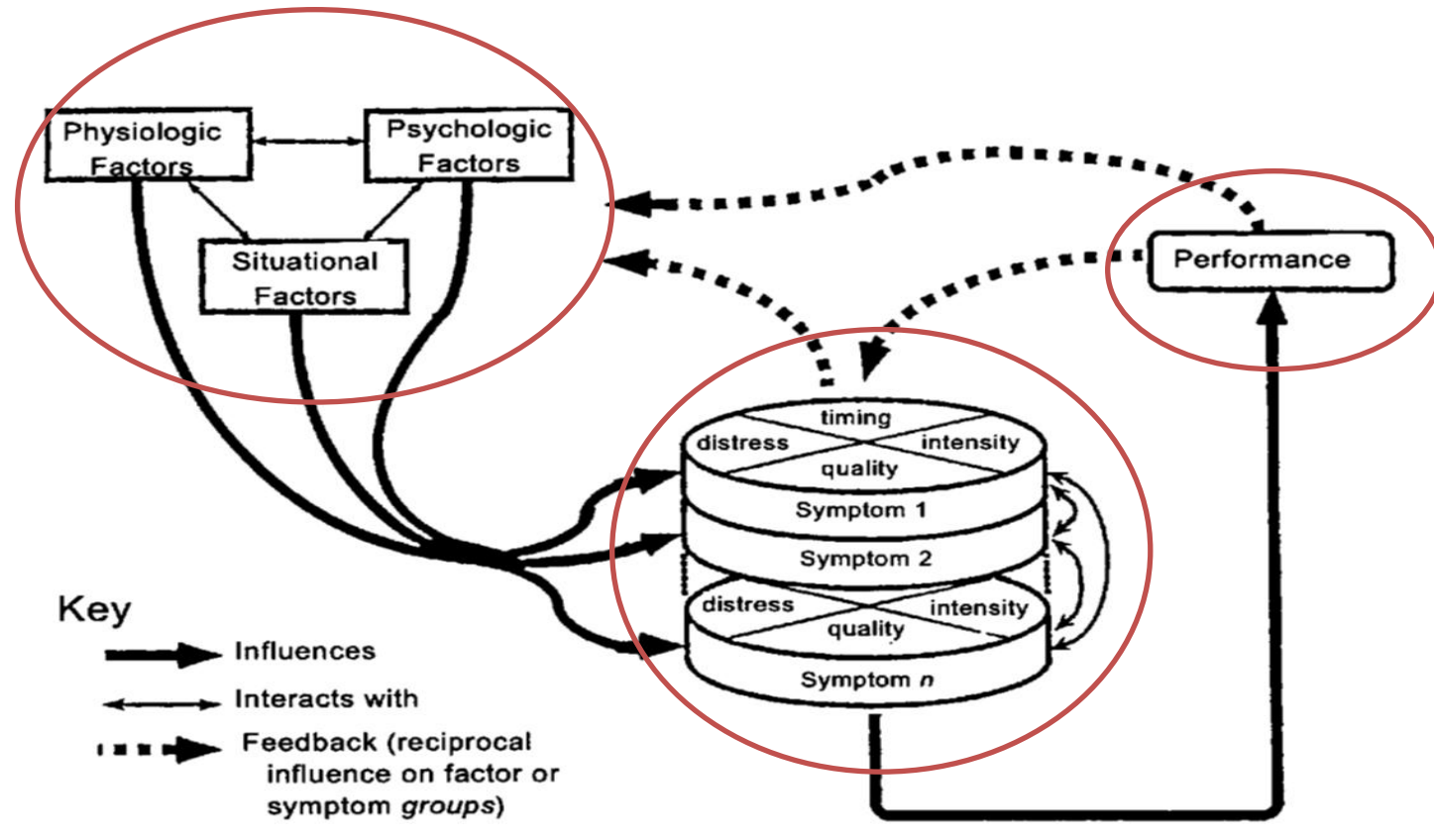
Pattern and structural cut-off > 0.50

# Interconnecting symptoms



Yet, little is known about relationships between **symptom clusters, predictors,** and the synergistic effect of multiple symptoms on **outcomes.**

# Theory of Unpleasant Symptoms (TOUS)



# Current study

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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

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

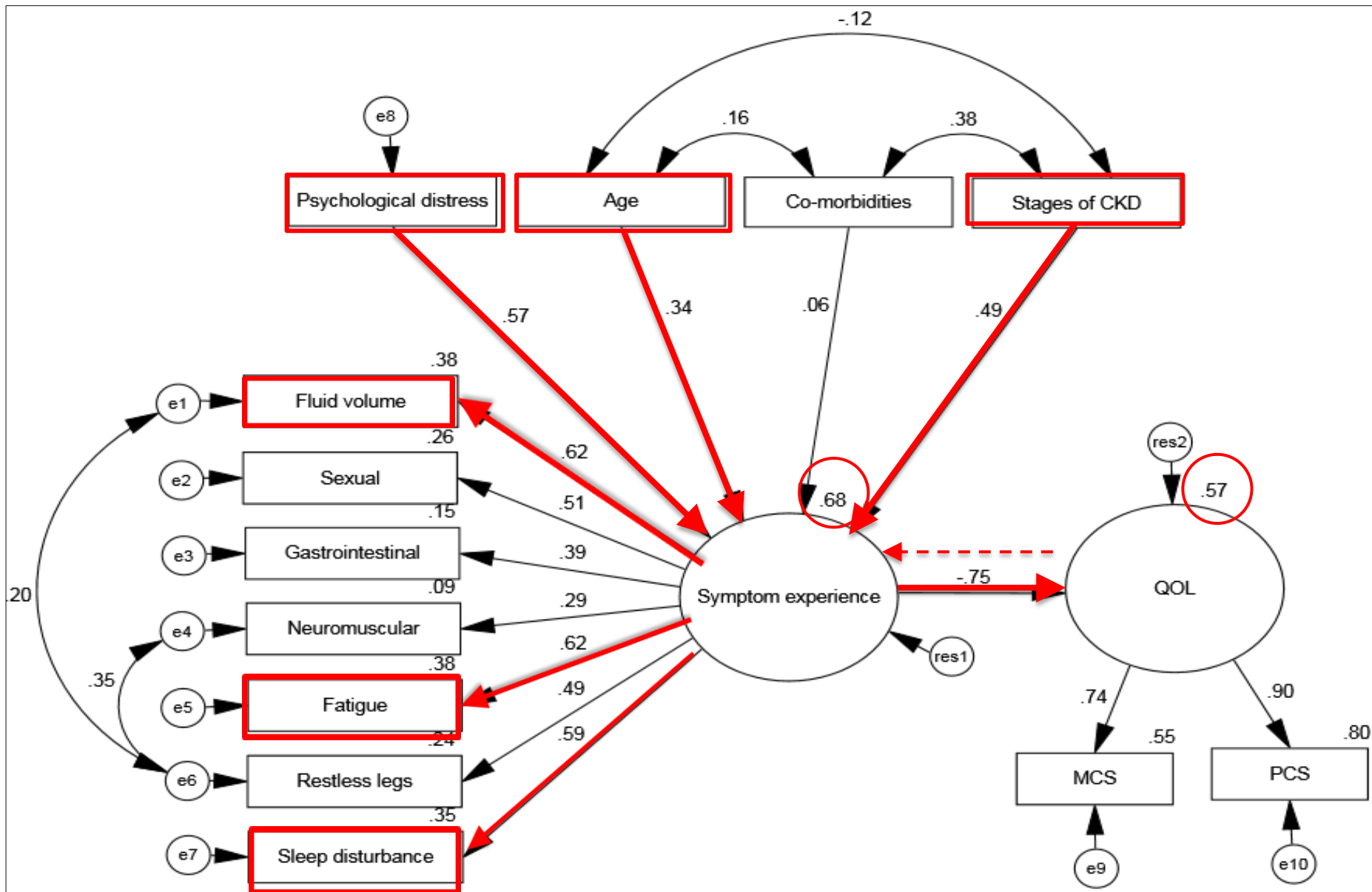


## Inclusion criteria

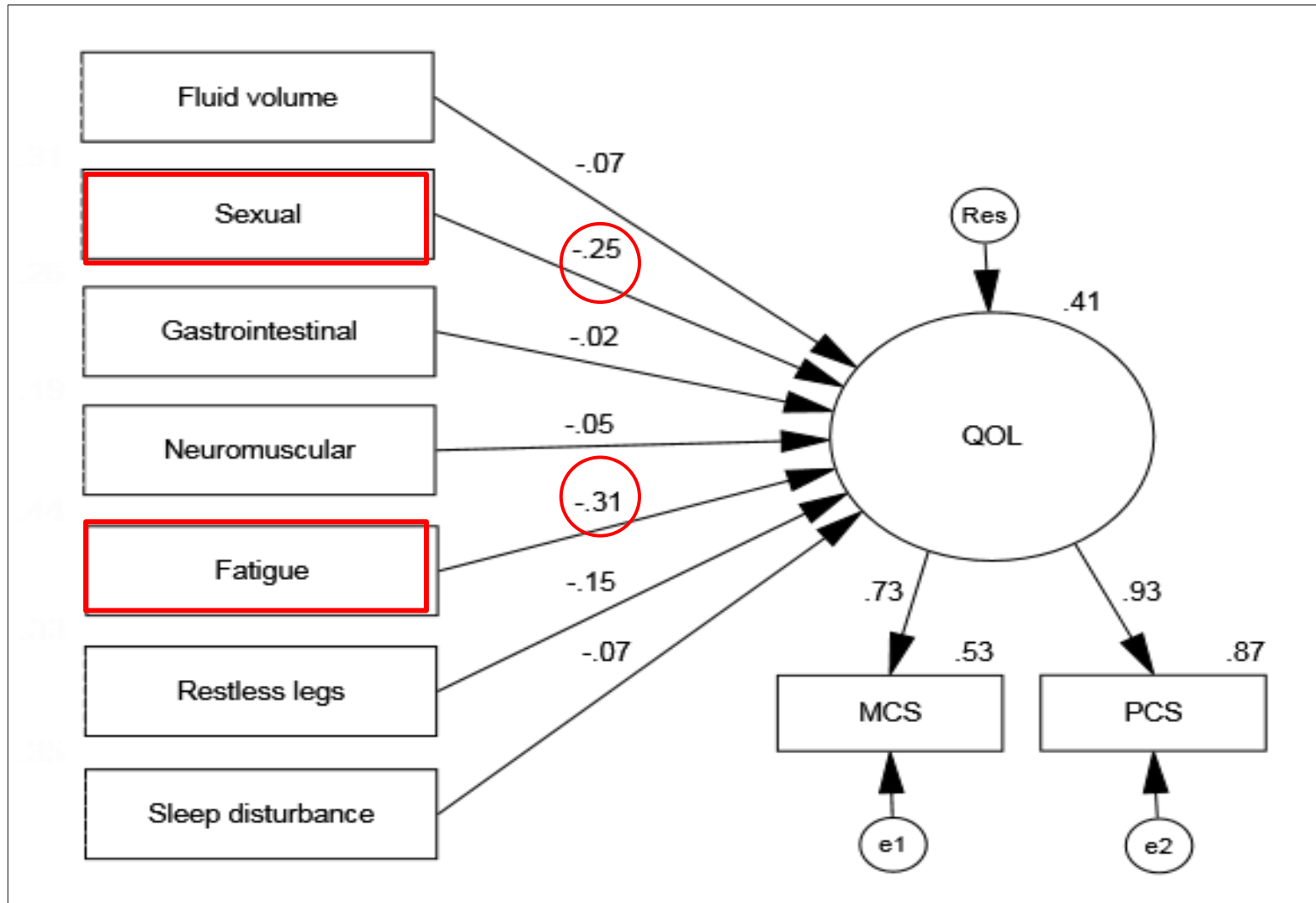
- Adults ( $\geq 18$  years),
- Diagnosed with CKD (eGFR  $< 30$  mls/min/m<sup>2</sup>)
- Willing to participate & able to provide consent
- Able to communicate in Arabic

- 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)

# Final structural model



# Symptoms Predicting Quality of Life in CKD



# 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

- Almutary, H., Bonner, A., & Douglas, C. (2013). Symptom burden in chronic kidney disease: a review of recent literature. *Journal of Renal Care*, 39(3), 140-150.
- Almutary, H., Douglas, C., & Bonner, A. (2016). Multidimensional symptom clusters: an exploratory factor analysis in advanced chronic kidney disease. *Journal of Advanced Nursing*, 72(10), 2389-2400.
- Almutary, H., Douglas, C., & Bonner, A. (2017). Towards a symptom cluster model in chronic kidney disease: A structural equation modelling approach. *Journal of Advanced Nursing*, early online.

**Thanks for your attention!**  
**Any questions?**



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