

## Sigma Theta Tau International's 29th International Nursing Research Congress

### Symptom Clusters in Hemodialysis

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The cycle of waste and electrolyte dysregulation, disease-related volume expansion, and fluid removal by HD leads to hypertension and heart failure, with accompanying symptoms of shortness of breath, cognitive impairment, nausea, anorexia, fatigue, weakness and edema. Fluid removal (ultrafiltration) during HD further exacerbates the symptom burden.<sup>1-5</sup> HD patients, therefore, can suffer from a variety of physical and emotional symptoms. A relatively small number of studies have aimed to quantify and/or qualify symptom burden and symptom clusters in HD patients.<sup>6-11</sup> The majority of the available literature has not examined the wide range of symptoms that are known to affect this population and has used general quality of life measures or ad hoc instruments.<sup>12, 13</sup> Improved recognition and identification of symptoms experienced independently and concurrently could translate into the development of symptom prevention and management interventions. The purpose of this presentation is to explore the symptom burden experienced by patients in the hemodialysis (HD) patient population and identify HD patient symptom clusters.

#### Methods

We conducted a secondary analysis on a 42 patient HD patient sample of a double-blinded randomized controlled trial. Patients were randomized to one of three dietary sodium intake groups (1500 mg/day, 2400 mg/day, ambient intake group). Primary outcomes were quality of life and symptom scores as operationalized by the Kidney Quality of Life (KDQOL) and Palliative Outcome Scale-Renal (POS-S) Assessments. POS-S scores were utilized for the symptom cluster analyses.

Principal components analysis with a varimax rotation was used to identify symptom clusters in the convenience hemodialysis patient sample.

#### Results

The sample was overwhelmingly African American (85 %) and predominately male. The mean age was 56 years (SD=11.69). The Forty-five percent reported hypertension as the etiology of ESRD. The majority of participants perceived their health to be at least "good" (55%). Baseline quality of life scores were the same across the sample. No statistically significant difference in symptom scores. Four symptom clusters emerged from the cluster analyses.

There were limitations to our study. In particular, the primary Study was a feasibility study with minimal power, a small convenience sample and the survey consisted of 17 items. We also found that some of the survey items correlated heavily with one another. Sampling bias may also have been a factor in the results of the study.

#### Conclusions

A larger scale RCT is necessary to explore clinical relevance of symptom clusters identified.

Symptom Cluster research is its infancy in the HD patient population. Further analyses with larger samples are necessary to begin to develop interventions to improve the patient symptom experience.

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**Title:**

Symptom Clusters in Hemodialysis

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**References:**

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### **Abstract Summary:**

The purpose of this presentation is to explore the symptom burden experienced by patients in the hemodialysis (HD) patient population and identify HD patient symptom clusters. Improved recognition and identification of symptoms experienced independently and concurrently could translate into the development of symptom prevention and management interventions.

### **Content Outline:**

1. *Objectives*
  1. Describe the mechanism of symptoms in HD patients.
  2. Identify symptoms experienced in HD.
  3. Discuss symptom clusters identified in a sample of HD patients.
2. Background and Significance
  1. Symptom burden in HD is substantial and has a tremendous negative impact on all aspects of quality of life.

2. In ESRD, the nephron is non-functioning, resulting in an accumulation of solutes, wastes, and fluid in the blood.
  3. Volume expansion results in symptoms such as shortness of breath, cognitive impairment, nausea, anorexia, fatigue, weakness and edema.<sup>50</sup>
  4. Electrolyte and waste accumulation cause symptoms pain, cramps, hypotension, restless legs and thirst.
  5. Inability to eliminate nitrogenous wastes (urea) causes skin disorders; gastrointestinal and neurologic symptoms such as nausea, anorexia, constipation, neuropathy of the extremities, mobility issues, pruritus; and sexual dysfunction.
  6. The intermittent nature of HD ultrafiltration results in frequent fluid shifts and rapid changes in serum osmolarity during sessions.<sup>19</sup> As a result, patients may experience hypotension, fatigue, insomnia, chest pain, cramping in lower extremities, nausea and headaches.
  7. Symptoms may be so debilitating that HD sessions must be prematurely discontinued due to ultrafiltration intolerance, or patients may skip sessions to avoid them all together, resulting in an exacerbation of symptoms related to solute (sodium), volume, and waste accumulation.
  8. Symptom science is a relatively new area of inquiry for the hemodialysis patient population.
3. Purpose of the Study and Conceptual Framework
    1. The purpose of this secondary analysis was to identify symptom clusters in a HD patient population.
    2. A physiological conceptual framework based on the pathophysiology of ESRD and its symptoms guided the study development and methodology.
  4. Study Aims
    1. Aim 1: Determine the feasibility of symptom clusters analysis in a small, convenience sample of HD patients.
    2. Aim 2: Identify symptom clusters in a HD patient population.
  5. Design/Methods
    1. Feasibility, pilot study.
    2. A three-group, double blinded, randomized controlled trial with a sample of 42 HD patients.
    3. Participants were randomized three levels of sodium intake (ambient [CG], 1.5G, and 2.4G).
    4. Factor analysis was conducted via SPSS v. 23
      1. Principal components analysis
      2. Varimax rotation
    5. Setting and Sample
      1. Patients were recruited from an urban, academic, tertiary acute care center.
      2. Forty-four participants, 2 withdrawals due to illness: total of 42 participants.
    6. Measures
      1. Palliative Care Outcome Scale (POS-S Renal).
    7. Results
      1. Overwhelmingly African American (85 %).
      2. Forty-five percent reported hypertension as the etiology of ESRD.
      3. Predominately male (52.5%).
      4. Mean age was 56 years (SD=11.69).
      5. The majority of participants perceived their health to be at least “good” (55%).
      6. Baseline quality of life scores were the same across the sample.
      7. No statistically significant difference in symptom scores.
      8. Four symptom clusters emerged from the cluster analyses.
        1. Uremic/emotional manifestations.
        2. Neurologic manifestations.
- Sensory motor processing disorder manifestations.

1. OTHER??

9. Limitations

1. Primary Study was a feasibility study with minimal power.
2. Small convenience sample and the survey consisted of 17 items.
3. Some survey items correlated heavily with one another.
4. Sampling bias

10. Conclusion

1. A larger scale RCT is necessary to explore clinical relevance of symptom clusters identified.
2. Symptom Cluster research is its infancy in the HD patient population. Further analyses with larger samples are necessary to begin to develop interventions to improve the patient symptom experience.

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**Professional Experience:** Dr. Clark-Cutaia is an experience advanced practice provider and researcher, as well as Assistant Professor at the NYU Rory Meyers College of Nursing. She recently completed research under a National Institute of Nursing Research Career Development Grant (1K23NR015058-01) focusing on dietary sodium restriction and hemodialysis associated outcomes. In particular, Dr. Clark-Cutaia is evaluated the current dietary sodium intake restrictions set forth by the National Kidney Foundation and American Heart Association for beneficence in the hemodialysis patient population. The data from that line of inquiry is the impetus for this symposium.

**Author Summary:** Dr. Clark-Cutaia is interested in symptom prevalence, science and management; morbidity, and mortality in chronic illness. In particular, she is interested in hypertensive, diabetic and hemodialysis patients. She has developed an interdisciplinary program of research on the biologic basis and symptom management of adults with chronic illness. Her clinical experience in the civilian and military sectors have influenced her program of scientific inquiry and gives her a unique perspective on care delivery and its impact.