Network Analysis of Sedative Medication Use in a Canadian Cohort of People Living with HIV: Uncovering Potential Sedative Medication Drivers of Frailty States

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BACKGROUND

- The increased prevalence of comorbidities and polypharmacy in people aging with HIV increases the risk of a high sedative burden.
- Sedative burden has been reported to be associated with frailty.

OBJECTIVE

Using network analysis, we aimed to describe the sedative co-medication patterns in frailty states and identify potential sedative medication drivers of frailty.

METHOD

Participants
321 individuals aged ≥ 35 years living with HIV and using sedatives(Total N =824)

Physical Frailty
Modified frailty phenotype criteria (≥ 3)

Sedative Use
Sedative Load Model (SLM)

Network Visualization
Circle layout algorithm (NodeXL Pro)

Analysis
- **Network Comparison**: Permutation Test
- **Key Node Changes**: Neighbourhood Shift score (NESH) and Δ Betweenness (Netshift)

RESULT

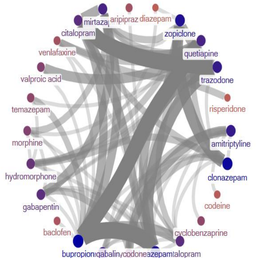

Figure 1:Sedative Network
- **254** unique drug combinations
- **51** sedatives
- Most connected node**: Bupropion**
- Top combination: **Bupropion-Lorazepam; Quetiapine-Brupopion**

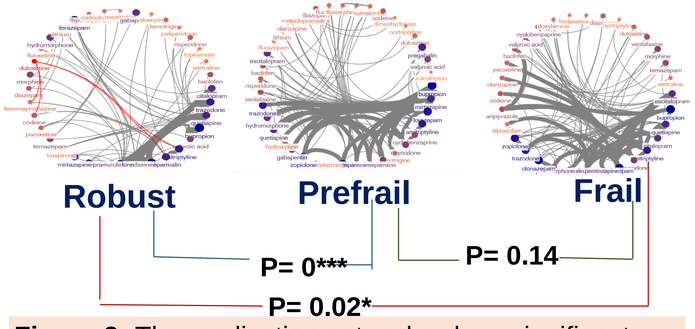

Figure 2: The medication networks show significant differences between robust and prefrail (p = 0) and robust and frail (p = 0.02), with no significant difference between prefrail and frail (p = 0.184).

Top Node Drivers based on NESH Score and ΔBetweenness

- **Robust/Prefrail**: Baclofen
- **Robust/Frail**: Gabapentin
- **Frail/Prefrail**: Pregabalin

CONCLUSION

- Sedative medication patterns differ significantly between robust and prefrail/frail individuals, with the most significant changes in the prefrail group. This highlights the need for careful monitoring as frailty develops.
- Reducing sedative burden, particularly in managing neuropathic pain, may help mitigate the impact on frailty.