How Does Health-Related Quality Of Life Relate To Symptoms Experience In HIV Patients Treated With Highly-Active Antiretroviral Therapy?

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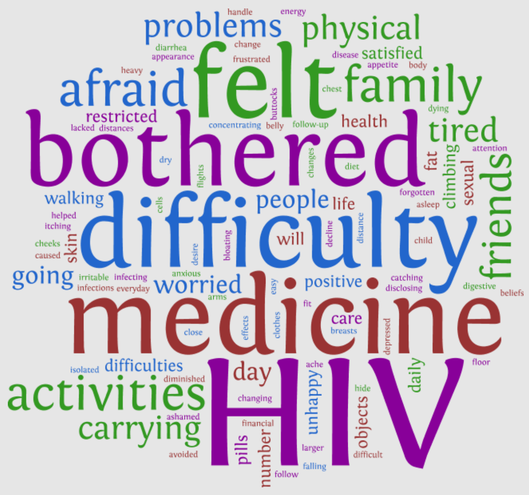
Objectives

Health-related quality of life (HRQL) is modulated by the type and frequency of symptoms experienced in daily life. Such a relationship is likely determined in part by treatment regimen and health care system. We studied how symptoms reported by HIV patients under PI- vs. NNTI-based HAART relate to different HRQL dimensions on the PROQOL-HIV questionnaire.



Methods

N = 424 HAART patients (41 ± 10 yrs., 36% females, 8 countries: USA, Australia, France, Senegal, China, Thailand, Cambodia, Brazil), without comorbidity, completed a 31-symptom HIV checklist (presence/absence) and the PROQOL-HIV questionnaire. Hierarchical cluster analysis helped to study the structure of symptoms experienced in patients under PI (N = 242) or NNTI (N = 182) regimen. Canonical correlation analysis (CCA) was used to uncover the relationships between symptoms and HRQL dimensions, and between-country variations.

The PROQOL-HIV questionnaire includes 43 items covering eight dimensions: Physical Health and Symptoms (PHS, 9 items), Treatment Impact (TI, 10), Emotional Distress (ED, 4), Health Concerns (HC, 4), Body Change (BC, 4), Intimate Relationships (IR, 3), Social Relationships (SR, 2), Stigma (ST, 2). It has been shown to meet standard psychometric criteria (Duracinsky et al. *JAIDS*, submitted).

Results

Hierarchical cluster analysis showed that a common group of symptoms related to body fat (lipodystrophy) and weight changes was shared by patients across treatment regimens (see 3rd cluster for the NNTI group and last cluster for the PI group, starting from the left in Fig. A). The number of clusters was selected by looking at the resulting dendrogram, but silhouette width and the gap statistic were used to assess its consistency.

Figure A. Cluster results for the two treatment groups. (Hierarchical clustering on terachoric correlation matrices, with average link.)
For example, indicators of fat loss were found to occur together in both groups.

The frequency of some side-effects—sleep disturbance, headache, diarrhea, nausea, fatigue and pain—was higher with PI regimens (Fig. B), while specific patterns of symptoms associations were found in both groups (Fig. C).

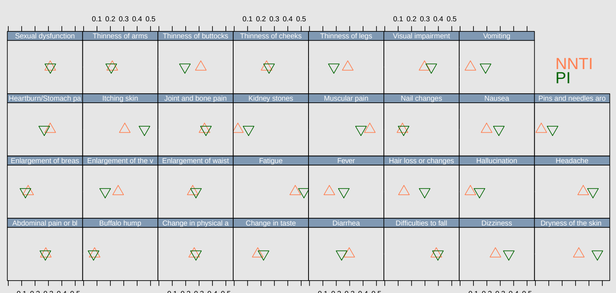


Figure B. Mean frequency of symptoms in the two treatment groups.
For example, nausea is more prevalent within the PI group; thinness of buttocks is more often found with NNTI.

The CCA seeks maximally correlated principal directions in two-block data. It showed that (a) the following symptoms: body fat change, sleep disturbance, skin problems and abdominal pain were related to the 'body change' and 'physical health and symptoms' HRQL dimensions (canonical correlation, 0.78), and (b) symptoms concerning physical appearance were related to the 'stigma' dimension, but not other side-effects (Fig. D).

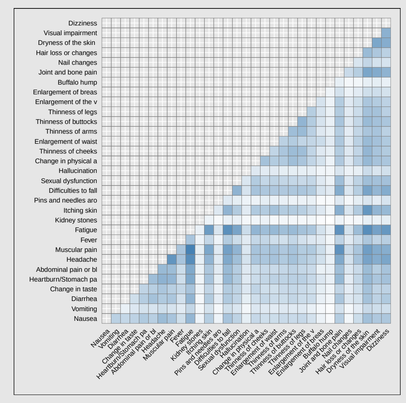


Figure C.
Co-occurence of symptoms. Darker color indicate a stronger association (as measured by observed frequency) between symptoms.
For example, muscular pain generally comes with fatigue, and fatigue is often found occuring together with joint and bone pain.

This study also replicated a common finding whereby patients from Western countries (France, Australia, USA) tend to report better HRQL compared to Chinese and Cambodian patients, the latter also experiencing more symptoms due to PI-based treatment.

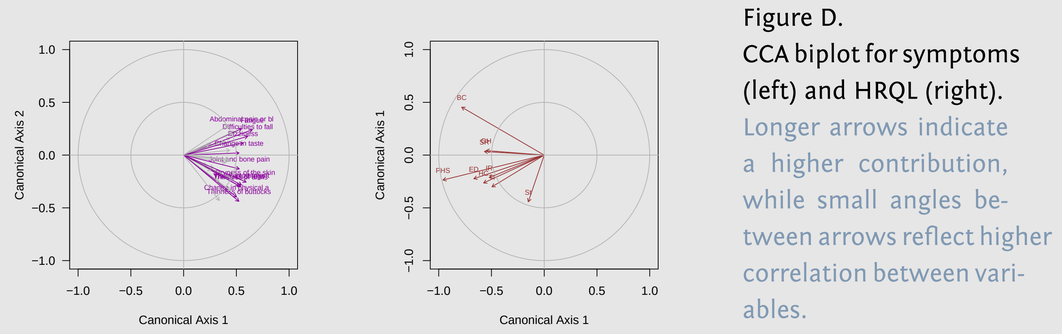


Figure D.
CCA biplot for symptoms (left) and HRQL (right).
Longer arrows indicate a higher contribution, while small angles between arrows reflect higher correlation between variables.

Conclusions

Treatment-related symptoms aligned with PROQOL-HIV dimensions and known differences between countries. The use of CCA as an exploratory multiple endpoints model helped to unravel complex relationships between symptoms and HRQL facets. The choice of treatment strategies should rely not only on symptoms experience, but also account for their relations to HRQL in light of varying access to care.