Utility of Pittsburgh Sleep Quality Index (PSQI) in people living with HIV (PLWH) for assessment and monitoring of sleep disturbance in a community HIV clinic.

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Background: Despite being virologically suppressed with CD4 counts >500mm, PLWH frequently complain of poor functional outcomes including sleep disturbance.¹ We therefore assessed this using the PSQI validated tool to both select patients for intervention with sleep hygiene measures, in addition to anti-retroviral (ARV) switch if clinically appropriate. This was followed by re-assessment after the intervention(s) to establish if any improvement in sleep disturbances based on PSQI scores.

Aims: The PSQI consists of 9 questions covering 7 sleep domains, including sleep quality/latency/duration/efficiency/disturbance/medication and daytime dysfunction and is scored 0-6 each, giving total composite score of 0-21 points. A total score of ≥6 being indicative of a significant sleep disturbance.

Methods: Patients attending for routine HIV bloods monitoring over a 3 month period (n=150) were selected for PSQI assessment in clinic. Of whom 37 patients (92.5%) scored ≥ 6 points, of these, all of them were provided with: a) sleep hygiene leaflets, b) describing good sleep habits and b) ARV switch if current regimen clinically felt to be an aggravating factor and in line with local NICE guidelines. In total 15 yrs (41%) consented and switched to alternative ARV regimens at the time of analysis. PSQI was repeated at least one month following either intervention with baseline demographic and clinical associations of mean PSQI scores. Unpaired t test was used for statistical significance.

Results: Overall Mean PSQI score=12 (moderately severe sleep disturbance)

A/Baseline Demographics
Mean age 40 yrs, Age <50yrs (PSQI=12.9) was associated with greater sleep disturbance than ≥ 50 yrs (PSQI=10.8). However this was not significant. No significant difference in mean PSQI score for gender, males (PSQI=12) vs females (PSQI=12.5) or ethnicity BAEM (PSQI=11.9) vs white (PSQI=12.3). No significant difference in duration of HIV ≥10 yrs (PSQI=11.9) vs <10 yrs (PSQI=12.8).

B/Baseline clinical
Mean CD4-971mm³, >500mm³-81%, <200-92%, <50-84%. A documented history of past or current mental health problems (60%, PSQI=13.40) or exposure to antidepressants/antipsychotics (46% PSQI=14.82) was significantly associated with more severe sleep disturbance than those without (PSQI=9.6 and 10.45 respectively) p<0.01. There was an association with greater sleep disturbance and recent STI acquisition (PSQI=13.5 vs 12) and recreational drugs misuse (PSQI=13.6 vs 11.8) compared to without. However this was statistically not significant.

C/Baseline ARV’s (Fig 1)
Integrate strand transfer inhibitor(INSTI) drugs represented 67.5% of ARV regimens prior to intervention, of which Dolutegravir(Dol) represented 68% (Fig 2) with non nucleoside reverse transcripntase inhibitors (NNRTI’s) 30%. There was no difference in PSQI score between those on INSTI’s compared to non INSTI regimens. However Dolutegravir was found to have significantly greater sleep disturbance than other INSTI’s (p<0.05 X Fig 3).

D/Intervention(s) (Fig 4)
Sleep leaflet plus ARV switch -37 (100%), Sleep leaflet only -22 (59%), ARV switch -15 (41%) Of whom 13 were switched to bicaptegravir/emtricitabine/emeforavir alafenamide (BICATAFV) and 2 to abacavir/lamivudine/altegravir (ABCST1RAL) from ARV based regimens of Dol-53%, Ral-27% and Efavirenz(4% Strategy (20%). Fig 5

E/Post Intervention PSQI re-assessment: (Fig 6a)
Overall sleep hygiene leaflets -37, including ARV switch -15 (31%) reduction in mean PSQI (p=0.01), sleep leaflet only -22, reduction of PSQI of 18% (NS). And ARV switch reduction of 52.5% (p=0.01) in sleep disturbance.

(Fig 6b) Adjusting for patients with mental health/antidepressant exposure (22) Overall PSQI reduction of 35% (p=0.01), sleep leaflet only 20.8 % (NS) and ARV switch reduction of 52% (p=0.01)

Conclusions:

- The PSQI questionnaire appears to be a reliable, simple and convenient tool for assessing PLWH with sleep disturbance within a clinic or virtual setting. In our cohort over 90% selected for assessment had a PSQI score of ≥ 6 indicating significant sleep disturbance

- Patients with current or past mental health issues or exposure to psychotropic drugs were highly represented within our selected cohort and were strongly associated with greater sleep disturbance with higher PSQI scores than those without.

- A package of intervention including providing information on improving sleep hygiene, in addition to ARV switch to alternative regimens with improved profile if clinically indicated. Significantly improved sleep disturbance, within a month of intervention including those with mental health problems.

- In line with UNAID’s 4th 90, of 90% improvement in “good health related quality of life”, we recommend consideration of wider routine assessment of sleep disturbance within the HIV cohort in order to identify poor functional outcomes at an earlier stage and appropriate intervention(s).

References
Ref 1 Milinkovic A, Singh S, Simmons B, Pozniak A, Boffito M, Nevokolo N. Multidisciplinary assessment of sleep outcomes in people living with HIV performed using validated sleep questionnaires. Int J STD AIDS; 31(10): 996-1003
Ref 3 Sleep hygiene centre for clinical interventions, psychotherapy, Perth W Australia
Ref 4 Top tips for better sleep .Gilead Sciences