

# 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.<sup>1</sup> We therefore assessed this using the PSQI validated tool<sup>2</sup> 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 0-3 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 (n=40). Of whom 37 patients (92.5%) scored ≥ 6 points, of these, all of them were provided with a: sleep hygiene leaflets<sup>3</sup>, describing good sleep habits and b: ARV switch if current regimen clinically felt to be an aggravating factor and in line with local NHSE guidelines. In total 15 pts (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- 971mm<sup>3</sup>, >500mm<sup>3</sup>-81%, V/L-<200-92%, <50-84%. A documented history of past or current mental health problems (60%, PSQI 13.45) 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)

Integrase 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 transcriptase 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) (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 bicitegravir/emtricitabine/tenofovir alafenamide (BIC/TAF/FTC) and 2 to abacavir/lamivudine/raltegravir (ABC/3TC/RAL) from ARV based regimens of Dol-53%, Ral-27% and Efavirenz (EFV) -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 PSQ 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 UNAIDS 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).

Fig 1: Distribution of ARV regimens at baseline-total (n=37)

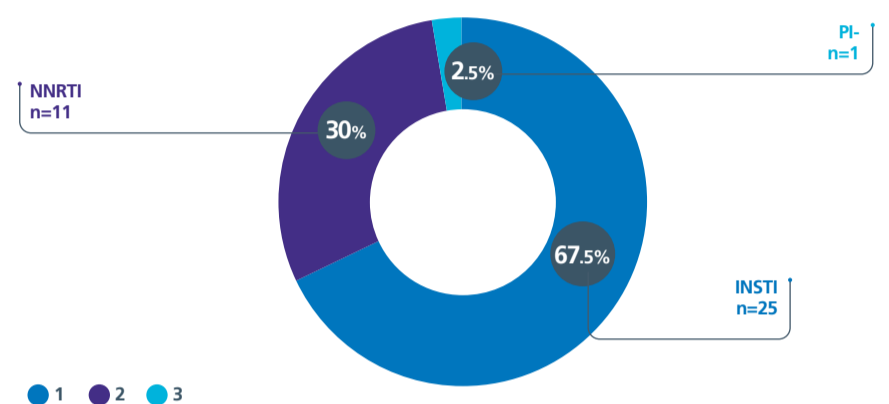


Fig 2: Distribution of INSTI Class (n=25)

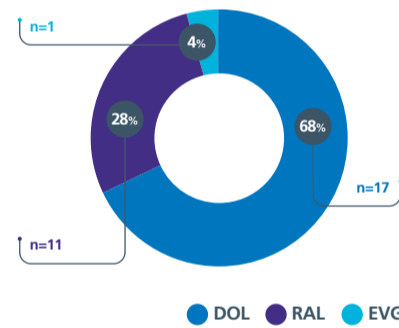


Fig 3: Association of PSQI score within INSTI class

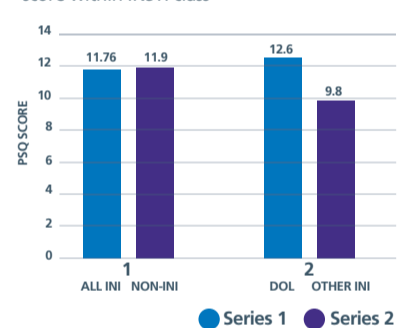


Fig 4: Intervention with sleep hygiene leaflets/ARV switch total n=37

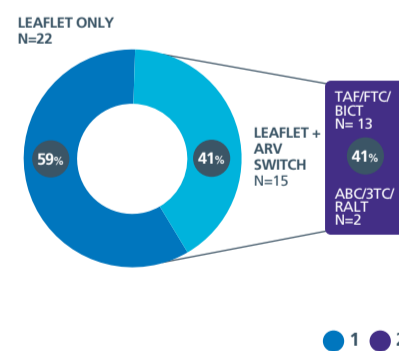


Fig 5: Individual ARV's prior to switch n=15

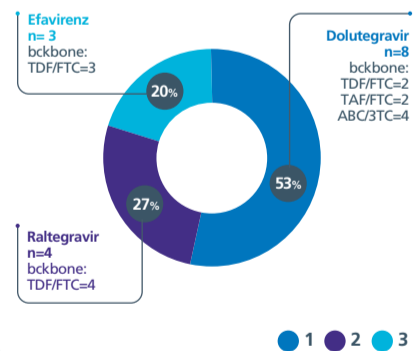


Fig 6a: Mean PSQI changes following intervention for overall, sleep hygiene leaflet and ARV switch. n=37

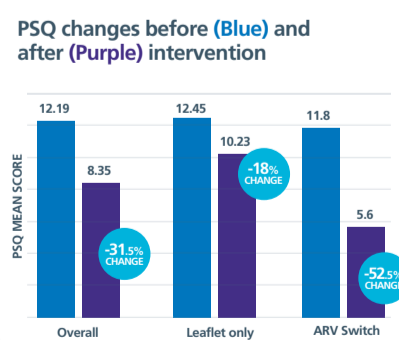
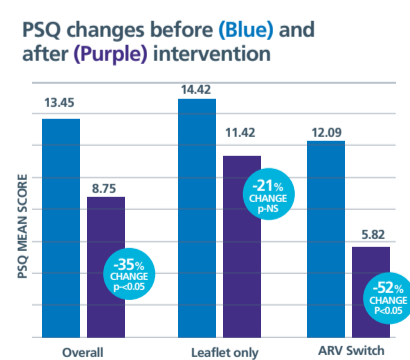


Fig 6b: Mean PSQI changes adjusting for mental health cohort n=22



## References

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- Ref 2 Buysse, DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ : PSQI: A new instrument for psychiatric research and practice. Psychiatry Research 28:193-213, 1989
- Ref 3 Sleep hygiene-centre for clinical interventions , psychotherapy, perth W Australia
- Ref 4 Top tips for better sleep - Gilead Sciences