Abstract P058 Table 1 Logistic regression models for association between demographic and sleep variables. Each of the six sleep parameters (dependent variables was evaluated in a separate model with the demographic variables serving as independent variables

| Self-reported sleep duration | Bedtime | Wake time | Insufficient sleep | Restless sleep | Snoring |
|-----------------------------|---------|-----------|---------------------|---------------|---------|
| Quartile 1 - Quartile 4     | Quartile 1 - Quartile 4 | Quartile 1 - Quartile 4 | Quartile 1 - Quartile 4 | Quartile 1 - Quartile 4 | Quartile 1 - Quartile 4 |
| OR (95% CI)                 | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| Age group (y)               |         |           |                     |               |         |
| 50-59 vs 40-49              | 0.83 (0.70, 0.98) | 1.00 (0.85, 1.17) | 0.76 (0.64, 0.89) | 1.13 (0.98, 1.37) | 1.39 (1.12, 1.72) | 1.28 (1.00, 1.63) |
| 60-69 vs 40-49              | 0.78 (0.65, 0.94) | 0.99 (0.83, 1.19) | 0.61 (0.51, 0.73) | 1.04 (0.84, 1.29) | 1.79 (1.42, 2.25) | 1.64 (1.26, 2.13) |
| 70-79 vs 40-49              | 0.93 (0.76, 1.15) | 0.75 (0.61, 0.92) | 0.85 (0.69, 1.04) | 1.15 (0.91, 1.47) | 1.97 (1.53, 2.54) | 1.54 (1.14, 2.07) |
| 80+ vs 40-49                | 1.24 (0.97, 1.59) | 0.53 (0.41, 0.67) | 1.18 (0.93, 1.51) | 1.37 (1.04, 1.81) | 2.46 (1.84, 3.29) | 1.80 (1.27, 2.55) |
| Sex                         |         |           |                     |               |         |
| Female vs Male              | 0.73 (0.64, 0.83) | 0.93 (0.82, 1.05) | 0.50 (0.44, 0.57) | 1.05 (0.91, 1.21) | 1.28 (1.10, 1.49) | 0.74 (0.62, 0.88) |
| BMI                         |         |           |                     |               |         |
| Underweight vs normal       | 1.01 (0.79, 1.30) | 0.71 (0.55, 0.90) | 1.06 (0.83, 1.35) | 1.09 (0.82, 1.44) | 1.27 (0.95, 1.69) | 1.34 (0.94, 1.89) |
| Overweight vs normal        | 1.03 (0.90, 1.19) | 0.97 (0.84, 1.11) | 0.91 (0.79, 1.04) | 1.14 (0.97, 1.33) | 1.14 (0.97, 1.34) | 1.30 (1.07, 1.60) |
| Obese vs normal             | 1.08 (0.93, 1.24) | 1.06 (0.92, 1.22) | 1.10 (0.95, 1.26) | 1.30 (1.11, 1.53) | 1.02 (0.86, 1.20) | 2.50 (2.05, 3.05) |
| Education                   |         |           |                     |               |         |
| 1-7 years vs No formal education | 0.89 (0.78, 1.02) | 1.19 (1.05, 1.35) | 1.02 (0.90, 1.16) | 0.93 (0.81, 1.08) | 0.94 (0.81, 1.09) | 1.29 (1.08, 1.53) |
| 8-11 years vs No formal education | 0.96 (0.79, 1.16) | 1.18 (0.97, 1.43) | 1.17 (0.97, 1.42) | 0.67 (0.53, 0.85) | 0.82 (0.64, 1.04) | 1.09 (0.83, 1.44) |
| 12+ years vs No formal education | 0.82 (0.64, 1.03) | 1.45 (1.15, 1.83) | 0.81 (0.64, 1.02) | 0.71 (0.54, 0.94) | 0.50 (0.36, 0.70) | 1.23 (0.89, 1.70) |
| Employment                  |         |           |                     |               |         |
| Employed vs Not working     | 0.57 (0.48, 0.67) | 1.00 (0.86, 1.18) | 0.43 (0.36, 0.50) | 0.94 (0.78, 1.13) | 0.76 (0.62, 0.94) | 0.99 (0.79, 1.24) |
| Homemaker vs Not working    | 0.45 (0.37, 0.54) | 0.88 (0.74, 1.05) | 0.96 (0.80, 1.14) | 0.34 (0.27, 0.43) | 0.86 (0.70, 1.06) | 1.20 (0.95, 1.52) |
| Marital status              |         |           |                     |               |         |
| Never married vs Current married | 1.18 (0.92, 1.51) | 0.95 (0.75, 1.20) | 1.57 (1.24, 1.99) | 1.10 (0.84, 1.46) | 1.14 (0.83, 1.56) | 0.82 (0.57, 1.17) |
| Separated / divorced vs Current married | 1.20 (1.01, 1.43) | 0.85 (0.71, 1.00) | 1.35 (1.13, 1.59) | 1.15 (0.94, 1.40) | 1.38 (1.12, 1.69) | 0.76 (0.59, 0.97) |
| Widowed vs Currently married | 1.23 (1.07, 1.42) | 0.79 (0.69, 0.91) | 1.20 (1.04, 1.38) | 1.13 (0.96, 1.33) | 1.33 (1.13, 1.57) | 0.66 (0.54, 0.81) |
| Wealth quintile             |         |           |                     |               |         |
| 2 vs 1 (lowest)             | 0.94 (0.79, 1.11) | 1.21 (1.03, 1.44) | 0.92 (0.77, 1.08) | 1.11 (0.92, 1.35) | 0.91 (0.75, 1.11) | 0.86 (0.68, 1.05) |
| 3 vs 1                      | 0.81 (0.68, 0.97) | 1.31 (1.11, 1.56) | 0.90 (0.76, 1.07) | 0.93 (0.76, 1.14) | 1.09 (0.89, 1.33) | 0.93 (0.73, 1.18) |
| 4 vs 1                      | 0.73 (0.61, 0.87) | 1.66 (1.40, 1.97) | 0.99 (0.83, 1.18) | 1.03 (0.84, 1.26) | 1.05 (0.85, 1.29) | 0.92 (0.72, 1.18) |
| 5 vs 1                      | 0.76 (0.63, 0.92) | 1.83 (1.52, 2.19) | 0.99 (0.83, 1.19) | 1.05 (0.85, 1.30) | 0.89 (0.72, 1.11) | 0.88 (0.68, 1.14) |

OR: odds ratio, CI: confidence interval, BMI: body mass index.
Introduction
Sleep interacts with both infectious diseases and NCDs, but is a frequently neglected aspect of health and well-being. In South Africa, both NCD and HIV are highly prevalent, making the study of the association of sleep disorders with this double epidemic an imperative.

Methods
We investigated sleep habits and their interactions with HIV and NCDs in 5059 individuals 40 years and above from the study ‘Health and Aging in Africa: a Longitudinal Study of an INDEPTH community’ in Agincourt, South Africa. We collected sociodemographic data, anthropometric measurements, and blood pressure, and tested for glucose, haemoglobin and HIV. Major individual components of the Pittsburgh Sleep Quality index (PSQI) questionnaire were analysed, in addition to other questions on health and well-being. Sex comparisons were carried out using an independent t-test, a Mann-Whitney U test or a Fisher’s Exact test. The association of demographic variables and sleep parameters were measured using logistic regression.

Results
Self-reported sleep duration was 8.2±1.6h. Insufficient sleep associated with age, education, unemployment, and obesity. Restless sleep associated with age, education, unemployment, and being female and single. Obesity associated with self-reported bedtime, wake time, insufficient sleep, snoring/gasping/periods of stopping breathing during sleep. Hypertension associated with shorter sleep duration, poor sleep quality, restless sleep, and sleep apnoea symptoms. Diabetes associated with bedtime, restless sleep, and snoring.

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Table 2
Logistic regression models for associations between sleep parameters and health conditions. Each of the six health conditions (dependent variables) was evaluated in separate model for each of the 11 sleep variables (independent variables), adjusted for BMI category and demographic characteristics (age group, sex, education group, employment status, marital status, wealth index quintile). The obesity outcome was not adjusted for BMI.

|                          | Obesity | Hypertension | Dyslipidemia | Diabetes | Anemia | HIV |
|--------------------------|---------|--------------|--------------|----------|--------|-----|
|                          | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| (1) Self-reported sleep duration |         |              |              |          |        |     |
| Quartile 4 (10-14h) vs 2 (8h) | 1.07 (0.86, 1.33) | 0.84 (0.69, 1.03) | 0.88 (0.72, 1.09) | 1.31 (1.06, 1.67) | 1.43 (1.10, 1.86) | 1.08 (0.84, 1.38) |
| (2) Bedtime |         |              |              |          |        |     |
| Quartile 2 (8-9pm) vs 1 (<8pm) | 1.22 (0.96, 1.55) | 1.15 (0.94, 1.42) | 0.94 (0.75, 1.17) | 1.01 (0.72, 1.40) | 0.96 (0.73, 1.26) | 1.35 (1.03, 1.76) |
| Quartile 3 (9-9:30pm) vs 1 (<8pm) | 1.36 (1.07, 1.73) | 1.26 (1.02, 1.56) | 1.10 (0.88, 1.37) | 0.80 (0.57, 1.12) | 0.99 (0.75, 1.30) | 1.21 (0.93, 1.58) |
| Quartile 4 (>9:30pm) vs 1 (<8pm) | 1.24 (0.96, 1.60) | 1.11 (0.89, 1.39) | 0.96 (0.76, 1.22) | 0.68 (0.47, 0.99) | 0.96 (0.71, 1.28) | 1.14 (0.86, 1.52) |
| (3) Wake time |         |              |              |          |        |     |
| Quartile 2 (5am) vs 1 (<5am) | 1.15 (0.95, 1.40) | 0.81 (0.68, 0.98) | 1.01 (0.83, 1.22) | 1.22 (0.91, 1.64) | 0.95 (0.75, 1.21) | 0.92 (0.74, 1.15) |
| Quartile 3 (>5:6am) vs 1 (<5am) | 1.27 (1.04, 1.55) | 0.98 (0.81, 1.18) | 1.07 (0.88, 1.30) | 1.05 (0.77, 1.43) | 1.00 (0.79, 1.28) | 1.14 (0.91, 1.42) |
| Quartile 4 (>6am) vs 1 (<5am) | 1.23 (0.97, 1.57) | 0.96 (0.77, 1.19) | 1.02 (0.81, 1.27) | 1.36 (0.96, 1.93) | 1.14 (0.85, 1.51) | 0.99 (0.75, 1.29) |
| (4) Sleep quality | Bad vs good | 0.82 (0.61, 1.11) | 1.43 (1.08, 1.90) | 1.28 (0.98, 1.68) | 1.08 (0.72, 1.64) | 1.33 (0.96, 1.84) | 0.76 (0.53, 1.09) |
| (5) Latency >30 min | At least once/week vs <once/week | 0.97 (0.84, 1.12) | 1.08 (0.94, 1.23) | 1.01 (0.88, 1.16) | 1.10 (0.89, 1.36) | 1.09 (0.91, 1.30) | 0.93 (0.78, 1.09) |
| (6) Insufficient sleep | Sometimes/rarely/never sufficient vs often/very often sufficient | 1.21 (1.05, 1.40) | 1.10 (0.96, 1.26) | 1.16 (1.01, 1.33) | 0.89 (0.72, 1.01) | 1.05 (0.88, 1.25) | 0.93 (0.79, 1.09) |
| (7) Restless sleep | Yes vs no | 0.95 (0.82, 1.10) | 1.19 (1.04, 1.37) | 1.06 (0.92, 1.22) | 1.29 (1.05, 1.60) | 1.04 (0.87, 1.25) | 0.86 (0.72, 1.02) |
| (8) Nocturnal awakenings | At least once/week vs <once/week | 0.96 (0.84, 1.10) | 1.12 (0.98, 1.27) | 0.97 (0.85, 1.10) | 1.02 (0.83, 1.25) | 0.99 (0.84, 1.18) | 1.09 (0.93, 1.27) |
| (9) Snoring | Yes vs no | 2.18 (1.85, 2.57) | 1.15 (0.98, 1.35) | 0.97 (0.82, 1.14) | 1.41 (1.12, 1.78) | 0.82 (0.65, 1.02) | 0.89 (0.72, 1.09) |
| (10) Gasping | Yes vs no | 2.13 (1.75, 2.59) | 1.07 (0.88, 1.30) | 0.93 (0.76, 1.13) | 1.27 (0.97, 1.67) | 0.90 (0.69, 1.28) | 1.05 (0.82, 1.34) |
| (11) Breathing stops | Yes vs no | 1.77 (1.37, 2.30) | 1.42 (1.09, 1.85) | 0.94 (0.72, 1.21) | 1.29 (0.91, 1.83) | 1.10 (0.79, 1.53) | 0.85 (0.60, 1.20) |

OR: odds ratio, CI: confidence interval, BMI: body mass index.
Discussion These data provide a basis for further studies of the relationship between sleep and other risk factors. It also provides valuable data about sleep habits in Africa, with potential for future analysis of how it is affected by urbanisation and industrialisation. Finally, it offers a unique opportunity for a population-based comparison of the effects of treated and untreated HIV infection, increasingly unavailable elsewhere.

| Abstract P059 Table 1 patient characteristics |
|---------------------------------------------|
| N = 123                                     |
| Age                                         |
| Female sex                                  |
| Diagnosis                                   |
| Narcolepsy type 1                           |
| Narcolepsy type 2                           |
| Psychiatric comorbidities                   |
| Refractory sleepiness                       |
| Number of wakefulness-promoting medications at last visit |
| 0                                           |
| 1                                           |
| 2                                           |
| 3                                           |
| 4                                           |
| Patients on                                 |
| Modafinil                                   |
| Methylphenidate XL                          |
| Methylphenidate IR                          |
| Dexamphetamine                              |
| Sodium Oxybate                               |
| Adherence                                   |
| Good (≥80%)                                  |
| Intermediate (51–79%)                       |
| Poor (≤50%)                                  |

P059 ADHERENCE TO WAKEFULNESS PROMOTING MEDICATION IN PATIENTS WITH NARCOLEPSY

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Introduction Excessive daytime sleepiness (EDS) is disabling and it’s control is usually contingent on ongoing pharmacological therapy including: modafinil, methylphenidate, dexamfetamine, pitolisant, and sodium oxybate. Irrespective of the medication used, all pharmacological options must be taken to have an effect and while assessment of treatment adherence is standard clinical practice in many chronic conditions, in sleep medicine, evidence regarding adherence to prescribed medications is strikingly limited.

The aim of this study was to assess degree and predictors of adherence to prescribed treatment in patients with narcolepsy attending a tertiary Sleep Disorders Centre.

Methods We examined adherence to treatment in consecutive adult patients with a final diagnosis of narcolepsy by comparing prescription collection rates with prescribed therapy over a one-year period. Three levels of adherence were defined depending on the medication supplied in the last year in proportion to the total prescribed: poor (≤50%), intermediate (51–79%), and good (≥80%) adherence. Patients with adherence <80% were considered as sub-optimally adherent.

Results Demographic and clinical characteristics 162 patients were identified, from which 123 subjects with accurate information regarding current treatment regimen and adherence were included (see table 1). Good adherence was seen in 52.8% of patients, whilst 12.2% were intermittently and 35% poorly adherent. No difference was seen in proportion of good adherence between patients with refractory vs non-refractory symptoms (41.5% vs 58.5%; p=0.68). The proportion of refractory patients with suboptimal adherence was 44.9%. Patients with NT1 were less likely than those with NT2 to have suboptimal adherence (40.4% vs 75%; p=0.002).

Discussion Our findings suggest that poor adherence is observed in a high proportion of patients with narcolepsy, and that a diagnosis of NT2 seems to be associated with non-adherence to prescribed treatment. Adherence to treatment should be routinely assessed in narcolepsy, particularly prior to initiating any step-up in therapy.

P060 CO-MORBIDITY OF DELAYED SLEEP PHASE AND PSYCHIATRIC CONDITIONS IN A COHORT OF ADOLESCENTS

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Introduction Delayed Sleep Phase (DSP) is an extremely common sleep problem during adolescence. It is typically manifested as frequently occurring late bedtimes and difficulties waking up. The prevalence in entire populations is estimated to be over 15%. While it is common in typically developing teenagers (estimates ranging from 15%–50%), its prevalence may be even higher in those suffering from psychiatric conditions such as severe depression or anxiety.

Methods We studied a cohort sample (n=295) of 17-year-olds (70% girls) in order to detect co-morbidity of DSP and several psychiatric disorders. For sleep measurements we used actigraphy (GeneActiv Original) for a minimum of 7 days as well as the Pittsburgh Sleep Quality Index. These served as tools for estimating a tendency towards DSP, which was defined as having a bedtime later than 1 AM for more than three times per week. Psychiatric disorders (major depressive disorder, generalized anxiety disorder, hypomanic disorders, obsessive-compulsive disorder, psychotic disorders, and eating disorders) were evaluated using a validated MINI structured interview.

Results The overall prevalence of DSP was 50% in our sample of adolescents. There were no differences between girls and boys in the prevalence of DSP (p=0.24). DSP was significantly higher in those with major depressive disorder (p=0.018), generalized anxiety disorder (p=0.025), and almost significant for obsessive-compulsive disorder (p=0.053). DSP was not more prevalent in hypomanic disorders, psychotic disorders, or any eating disorders (all p-values>0.3).

Discussion We found a significant co-morbidity between DSP and several psychiatric disorders. This suggests that there is an added burden of sleep problems in those with issues relating to mental well-being. As our study population is from a