Socioeconomic factors affecting the acceptance of continuous positive airway pressure in sleep apnoea syndrome patients
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Background: CPAP therapy is often associated with suboptimal adherence rates and the assessment of patients’ motivations and barriers is important for the treatment. The aim of this study was to investigate factors which may affect the acceptance of CPAP among patients with SAS.

Patients and methods: One hundred and nine patients who were diagnosed with SAS and prescribed CPAP during the last 2 years did not come to the follow-up visit despite the instructions. We contacted them via telephone and asked about the acceptance and the adherence to CPAP therapy.

Results: From 109 patients, 62 (56.8%) (age 49.2 ± 11.3 years, 93.5% male) were found and answered the questions. Twenty two patients (35.5%) did not purchase the CPAP device (group 1) mainly (50%) due to economic restriction, 12 patients (19.4%) abandoned CPAP therapy over time (group 2) mainly (50%) due to subjective perception of treatment ineffectiveness and 28 patients (45.1%) continue CPAP but they ignored the follow-up procedure (group 3). No significant correlations were observed between anthropometric characteristics, severity of SAS, socioeconomic and employment issues and the decision about the CPAP treatment.
In each group, but group 1 had lower education level than the two others (Basic level 36.4% vs 16.6% vs 25%). No significant differences were noted between the 3 groups with respect to method of CPAP titration, age, BMI, AHI but the ESS was higher in group 3 (p<0.05).

Conclusion: Individuals’ economic situation and education status seems to influence their attitude to CPAP treatment. These factors should be taken into account in the CPAP prescription and follow up for their optimal management.

P3845 Effects of obesity on lung function and SaO₂ in children with habitual snoring
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Background: Habitual Snoring (HS) is a common pediatric condition with a prevalence ranged between 7 and 10%. It has a multifactorial etiology and it is often associated with several comorbidities. Many studies showed low spirometric values, overweight, obesity, diabetes, and nocturnal polysony. Percentile Body Mass Index (BMI) was calculated for each patient.

Methods: We enrolled 53 children (mean age 9.5, 34 male) in the Pediatric Department of Immunology and Allergology of Pollicino Umberto I in Rome. All patients were positive to a validated questionnaire for sleep disordered breathing, performed a spirometry and a nocturnal pulse oximetry. Percentile Body Mass Index (BMI) was calculated for each patient.

The selected patients were divided into 4 percentile BMI groups (Group I: percentile 0-25; Group II: percentile 26-50, Group III: percentile 51-75, Group IV: percentile 76-100).

Results: We found that group IV (BMI>75th percentile) had significantly lower values of SaO₂ and forced expiratory volume in one second (FEV1) when compared with the other groups (respectively p<0.02 and p<0.05).

Conclusions: Lung function (reduced FEV1) and minimum SaO₂ are influenced by the progressive increase in percentile BMI with changes in FEV1 better demonstrated when BMI>75th percentile. Our findings suggest that in children with HS the presence of obesity can cause a sistematic inflammatory pattern that negatively influence lung function and blood SaO₂.

P3846 Influence of gender in obstructive sleep apnea characteristics and treatment
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Introduction: Obstructive sleep apnea (OSA) was initially recognized as a disease of men. However, prevalence of OSA in women is not as low as historically thought. Little is known about the influence of gender in OSA.

Aims: To assess gender differences in demographics, clinical presentation, sleep study findings, and treatment parameters in OSA patients.

Methods: A transversal study was performed, including patients newly diagnosed with OSA, that initiated APAP treatment 6 months before.

Results: 187 patients were included, 128 male and 59 female. Women were older than men (60.5±7.9 vs. 54.4±13.0), their Body Mass Index (BMI) was higher (35.8±4.7 vs. 32.0±4.7) and neck circumference was lower (39.9±3.8 vs 44.0±3.7). Comorbidities were more frequent in women, including hypertension. Women self-reported more frequently initial insomnia, awakenings, restless legs symptoms, gasping, nightmares, subjective poor sleep quality, depression and daytime sleepiness, but no difference was found in Epworth Sleepiness Scale. Self-reported snoring was similar in both genders. Apnea/hypopnea index (AHI) was higher in men (43.1±19.1 vs. 35.7±21.8), even after adjusting for age and BMI. Apnea-hypopnea duration was also higher in men (22.8±6.7 vs. 19.8±4.9 seconds). The 95th percentile of pressure (P95) at 6 months of APAP was superior in women (12.0±2.5 vs. 10.7±2.9).

Conclusion: Gender differences need to be aware when assessing women for OSA. Women report more symptoms and poor sleep quality at a lower AHI and have more significant comorbidities. Despite a higher BMI, OSA severity was lower in females.

P3847 Sleep-disordered breathing in children with craniofacial anomalies
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Background: Children with craniofacial anomalies are at risk for sleep-disordered breathing (SDB). Their polysonographic and laboratory findings may differ from those of infants and children with SDB secondary to adeno-tonsillar hypertrophy.

The aim of the study was to evaluate the rate, characteristics, severity and laboratory findings of SDB in children with syndromic craniofacial anomalies.

Patients and methods: Twenty-six consecutive infants and children with syndromic craniofacial anomalies and snoring or noisy breathing were referred for an initial PSG to rule out SDB.

Results: Specific diagnoses and syndromes were: Crouzon’s (n=7), Apat (n=5), Saethre-Chotzen (n=11), Goldenhar (n=8), Diaphragmatic cleft sinusoscopy (n=2), achondroplasia (n=8) and Pierre-Robin (n=2). Their mean age was 5.1 years, none was overweight or obese. Of these patients, 19/26 (73%) had evidence of SDB and 7 (27%) had primary snoring. In patients with SDB, the mean apnea-hypopnea index (AHI) was 10.3 (median=5.7, range 2.5-65.0). Abnormally increased CO₂ was observed in 12/26 (46%). Laboratory results (mean, median, range) were: wide range CRP (7.2, 1.0, 0.1-33.5), total cholesterol (135, 125, 112-180), HDL (40, 37, 23-59), LDL (75, 67, 52-115), triglyceride – normal, fasting glucose and insulin – normal.

Conclusion: The results confirm a high prevalence SDB in children with craniofacial anomalies with a higher rate of carbon dioxide retention. Underlying chronic inflammation exists also in these patients. Metabolic changes were not found.
P3850
Respiratory symptoms, daytime sleepiness and quality of life – An epidemiological study on general populations in Iceland and Sweden
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Objective: This prevalence of excessive daytime sleepiness (EDS) and the association of EDS with respiratory symptoms and large variety of health variables was investigated in two well characterized random samples from the general population.

Methods: Adults aged ≥40 and living in Reykjavik, Iceland (n=939) and Uppsala, Sweden (n=996), were invited (www.boldstudy.org). Response rates 81, 15% and 62, 2%. In addition, the participants were asked to perform: The Epworth Sleepiness Scale (ESS), Short Form-12 and standardised questions about sleep and health, diabetes and hypertension.

Results: In Reykjavik mean (± SD) ESS was 6.0±3.9, compared to 6.1±3.9 in Uppsala. The prevalence of EDS, defined as ESS scores >10, were 18.5% in Uppsala and 18.4% in Reykjavik. EDS was more common among men than women and was more prevalent in age groups >60years (p<0.0001) but not related to body mass index (BMI) or smoking status. Those reporting habitual snoring and apneas scored higher on ESS (p<0.001) and so did also those with respiratory symptoms; wheeze and breathlessness (p<0.005), cough (p<0.001), asthma (p<0.03) and nasal allergy (p<0.02). There were no difference in EDS depending on insomnia, diabetes or hypertension. Mental health scores on SF-12 were significantly lower among those with EDS (p<0.05). There was no difference regarding physical health scores.

Conclusion: Excessive daytime sleepiness is a common complaint in the general population both in Iceland and Sweden. It’s more common among men than women, among smokers, and those with snoring and apneas. EDS was also related to respiratory symptoms, allergy and decreased mental quality of live.

P3851
Professional and frequent driving habits detected in the European Sleep Apnea Database (ESADA) – Call for a safety alert
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Obstructive sleep apnea (OSA) is associated with an increased risk for motor vehicle accidents. Treatment of OSA leads to a reduced risk. Many, but not all, EU countries associate untreated OSA with impaired capability to drive. The strategy to improve traffic safety for sleep centers has not been well addressed. This study captured driving habits in the multinational ESADA cohort. The ESADA database includes subjects with suspected OSA referred to 23 sleep centers in 14 EU countries. Reported parameters were obtained at regular clinical visits in association with an overnight sleep study in 8087 subjects (5789 males and 2289 females). Driving license status (no or A to E) was defined and mean yearly driving distance was recorded. AB license was reported by 4766 subjects (58.8% in men, 55.4% in women), CDE license by 923 (15.0% in men, 2.3% in women) and no driving license by 2488. Men reported a higher yearly driving distance than women (2184±478 km vs. 1068±1,347 km). 63% of subjects with severe OSA (AHI >30/h) were license holders. CDE license holders tended to be younger, less morbidx and used fewer medications. Central obesity, OSA severity and daytime sleepiness were similar in AB and CDE drivers. 43.3% of all license holders were frequent drivers (≥10,000 km/yr) and 35.4% (14.7%) of male (female) frequent drivers had severe OSA. The presence of EDS was more common among AB license holders. EDS was significantly related to respiratory symptoms and large variety of health variables. The prevalence of EDS, defined as ESS scores >10, were 18.5% in Uppsala and 18.4% in Reykjavik. EDS was more common among men than women and was more prevalent in age groups >60years (p<0.0001) but not related to body mass index (BMI) or smoking status. Those reporting habitual snoring and apneas scored higher on ESS (p<0.001) and so did also those with respiratory symptoms; wheeze and breathlessness (p<0.005), cough (p<0.001), asthma (p<0.03) and nasal allergy (p<0.02). There were no difference in EDS depending on insomnia, diabetes or hypertension. Mental health scores on SF-12 were significantly lower among those with EDS (p<0.05). There was no difference regarding physical health scores.

Conclusion: Excessive daytime sleepiness is a common complaint in the general population both in Iceland and Sweden. It’s more common among men than women, among smokers, and those with snoring and apneas. EDS was also related to respiratory symptoms, allergy and decreased mental quality of live.

P3854
Relationship between snoring with sleep behavioral and movement disturbance (SBMD) in children
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Background: Sleep disturbance is one of the most important subjects in pediatric medicine which its prevalence is 5% in society and have many important effects on child social function and quality of life. Sleep disturbance is seen in different kind of sign and symptom such as night terror, leg movement and walking and go to bed lately. Snoring prevalence is 12% in children that is one of the important reasons of sleep disturbance.

Methods: We have chosen 100 children with snoring as study group and 100 healthy children as control group. Their parents fill the questions about snoring and 22 item of SBMD like sleep walking, sleep talking, night terror. Pearson correlation coefficient was used to measure the strength of association between continuous variables. For analysis of qualitative parameters, we use chi-square and if it was required, checked by fisher’s exact test.

Result: The mean age of children was 6.8 years, mean height 116 cm, 41% were overweight or fatty and 52% were male. There were significant correlation among SBMD in case and control (8.54 vs 5.64 item, p<0.001), snoring and atenotonsilar hypertrophy (p<0.001), apnea and SBMD in case group (p<0.001), but no relationship among snoring and sex (p<0.001), snoring and age (p<0.001) and severity of snoring with SBMD in case group.

Conclusion: This study have showed the importance of sleep medicine in children we can prevent children from many sleep disturbance with on time diagnosis of snoring. It is important that we educated sleep subject to parents for helping to achieve better sleep in children.
P3855
Gastroesophageal reflux in patients with obstructive sleep apnea syndrome:
Value of isolated treatment with pantoprazole
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Objective: To test the value of treatment of gastroesophageal reflux disease (GERD) in improving the obstructive sleep apnea syndrome (OSAS).

Patients and methods: The study included 63 patients diagnosed with OSAS after complete history taking. Ewpoor sleepiness scale (ESS), physical examination, and full night polysomnography. Of them 29 patients were diagnosed with concomitant GERD by standardized Reflux Disease Questionnaire (RDQ), upper endoscopy, and 24-hour pH monitoring and receiving Pantoprazole 40 mg once daily for 2 months. The patients were reevaluated by polysomnography, ESS, quality of life (SF 36 v2).

Results: The twenty-nine patients with OSAS and GERD had significantly higher body mass index (BMI), waist circumference, and reported non significant increase in sleep and daytime symptoms of OSAS. After 2 months treatment with Pantoprazole, there was significant decrease in apnea hypopnea index (AHI), snoring events, arousal index, and ESS. Meanwhile, there was a significant improvement in sleep efficiency, minimum O2 saturation, desaturation index and quality of life parameters (SF 36 v2).

Conclusions: GERD and OSAS are common co morbid conditions. Adequate treatment of GERD with Pantoprazole, 40 mg/day for 2 months was effective in improving many subjective and objective findings of OSAS. In patients with OSAS and history suggestive of GERD, upper endoscopy, pH monitoring and treatment with proton pump inhibitors (PPIs) may be an important adjunct in controlling OSAS symptoms.

P3856
Potential Impact of the financial crisis: Experience of a sleep clinic in northern Greece
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Greece has entered a long period of economic crisis with adverse effects on various aspects of daily life. From 2009, poor countries with International Monetary Fund loans displace aid from public health and report negative effects on community health. The aim of our study was to evaluate the impact of the economic crisis on the population visiting a sleep clinic of a tertiary hospital between years 2008 and 2011.

Methods: Comparison of the number of patients, anthropometric data, symptoms and treatment acceptance between 2008 (beginning of crisis) to 2011 (great impact of crisis on salaries, psychology).

Results: The number of patients that visited the sleep clinic was significantly reduced in 2011 (n=127) compared with 2008(n=463) and 2009 (n=465). The age, BMI and ESS did not differ between the years (mean 52.23±13.7 years, 33.6±7.4kg/m², and 11.4±6.5 respectively). The main symptom of the patients was daytime sleepiness and the symptoms that were worse in 2011 compared with 2008 were headache (32.4% vs. 49.6%, p<0.001) and nightmares (44% vs. 75.9%, p<0.001). In 2008, 320 (69.1%) patients required treatment for Obstructive Sleep Apnea (OSA) and 196 (59.5%) of them received CPAP. In 2011, 111 (87.4%) required treatment, but only 68% received CPAP.

Conclusions: By the observation of the population visiting a Sleep Clinic, the economic crisis can be reflected in the number of patients, their symptoms and their perspective in treatment options.

P3857
The frequency of REM related OSA among patients with mild OSA and the relation between apnea and daytime sleepiness among these patients
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Aim: The question if REM related OSA is a specific clinical entity or if it is an early sign of severe sleep disordered breathing as there is high occurrence of REM OSA in mild and moderate cases, recently have attracted the investigators. In this study, we aimed to see the frequency of REM related OSA among patients with mild OSA; and also to evaluate relation between apnea and daytime sleepiness among REM related OSA patients.

Methods: 134 patients with mild OSA (RDi>5-15) among 1267 patients with PSG examination at sleep laboratory of Bezmialem University Hospital between August 2010 and February 2012 were retrospectively evaluated. Patients having REM apnea/Non REM apnea >2 and Non REM apnea <15 are considered as REM related OSA.

Results: 80 of 134 (60%) patients with mild OSA were considered as REM related OSA. When REM related OSA and Non-REM OSA are compared for age, gender, daytime sleepiness, BMI, neck surround and aditional diseases; mean age of REM related OSA group was found only significantly lower. Number of apnea in REM was over 15 at 87.3% of REM related OSA group and over 30 at 39.3% of them. There was no relation between apnea number at REM and daytime sleepiness system (p=0.81).

Conclusion: We may consider the result of lower mean age in REM related OSA group as a supporting result for early sign of severe sleep disordered breathing. We consider to follow up this group of patients to answer the question about subject.

P3858
Prevalence of symptomatic gastroesophageal reflux disease in Thai patients with obstructive sleep apnea: A cross-sectional telephone survey
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Background: Many studies revealed association between gastroesophageal reflux disease (GERD) and obstructive sleep apnea (OSA). Prevalence of symptomatic GERD in Thai population was 7-10%. No prior study of symptomatic GERD in Thai patients with OSA appears to have been published.

Methods: All patients underwent polysomnography within 18 months were reviewed. Telephone survey of symptoms-based GERD questions was introduced to all patients diagnosed with OSA. Unconnected patients were reviewed with chart and medication history.

Results: 413 patients were reviewed, 296 patients diagnosed with OSA. 196 patients were diagnosed with severe OSA. Baseline characteristics and sleep parameters were as follows: mean age 51.57 years (±13.96), body mass index (BMI) 28.05 kg/m² (±7.13), neck circumference 15.37 inches (±1.74), Ewpoor Sleepiness Scale (ESS) 10.87 (±4.86), and respiratory disturbance index (RDI) 61.09 events/h (±41.32). Symptomatic GERD were reported in 53 (18%) patients. Prevalence of symptomatic GERD in severe OSA was 23% (46 from 196 patients), which was significantly different from that in mild-to-moderate OSA (7%, p<0.001). Univariate and multivariate analyses demonstrated relationship between the prevalence of symptomatic GERD and Obesity (BMI ≥ 30 kg/m²) (OR 3.11, 95%CI 1.27-7.62, p=0.03) and severe OSA (RDI ≥ 30 events/h) (OR 1.42, 95%CI 1.12-1.64, p<0.001). Multicollinearity revealed that these two factors was not correlated in this study.

Conclusion: Prevalence of symptomatic GERD in Thai OSA patients is higher than general Thai people. Obesity or severe OSA independently affect occurrence of symptomatic GERD in OSA patients.

P3859
Prevalence of residual sleep apnea in patients treated with APAP and its predictive factors
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Introduction: Auto-adjusting continuous positive airway pressure (APAP) is a safe and proven effective treatment for obstructive sleep apnea (OSA). There are limited data on prevalence of persistent OSA in patients under APAP therapy.

Aim: To determine the prevalence of residual sleep apnea (RSA) in patients under APAP and its predictive factors.

Methods: A transversal study was performed, including patients newly diagnosed with OSA, that initiated APAP 6 months before (5.1% under iSleep; 46.8% under AutoSet Spirit II or SR). Exclusion criteria: Obesity-Hypventilation Syndrome and Central Sleep Apnea. Data were downloaded from devices and residual apnea-hypopnea index (AHI) was registered. Patients were considered to have RSA if AHE5. Only patients with acceptable leak were considered. Baseline demographic, clinical and sleep study were evaluated.

Results: 107 patients were included. 77 (72%) had acceptable leak, being considered for statistical analysis. Prevalence of RSA was 22.1%. Factors at baseline associated with RSA were: lower BMI (30.4±4.5 vs. 33.3±4.6 – p=0.028; severe OSA (31.2% RSA in severe OSA vs. 7.4% in moderate OSA) – p=0.018; higher central apnea index (3.1±1.4±4.2 vs. 0.9±1.2±2.5) – p=0.045; and higher apnea/hypopnea duration (24.0±7.3 sec vs. 20.8±4.1 sec) – p=0.045. Higher APAP pressures (95th percentile) were related to the occurrence of RSA (12.5±2.4 vs. 10.0±2.7) – p=0.001. APAP device was not related to RSA.

Conclusion: Residual OSA is common in patients treated with APAP. Lower BMI, severe OSA, higher central apnea index and longer duration of apnea/hypopnea are baseline predictors of RSA. These patients should be followed more closely to avoid suboptimal treatment.
**P3860**

The relationship between cigarette smoking and the quality of sleep and sleep disorders.

Onder Ozruzk, Ummukadin Kuru, Rola Al Habashneh, Yousef Khader, Basheer Khassawneh, Basheer Khassawneh.

Aim: In this study, the relationship was investigated between cigarette smoking and sleep quality, and sleep disorders.

Material and methods: Voluntary patients and their relatives, admitted to our outpatient clinics of Medical School of SDU, answered the questionnaire consisted of questions about Pittsburgh Sleep Quality Index, Berlin Sleep Apnea Test (BSAT), Fagerstorm Tolerance Test. The demographic properties, smoking status and also alcohol, tea and coffee usage and the additional diseases were recorded.

Results: The volunteers who answered the questionnaire were 98 persons (52 M/46 F) with mean age 33.0±1.17 and with mean BMI 23.9±3.042 kg/m². The mean ages of men and women are statistically significant (p<0.005), but not BMI (p=0.05). The neck circumferences of cigarette smoking persons and ex-smokers are higher than never smokers (p=0.046). The mean PSQI score greater than 5 was found in 26 smokers and in 21 never smokers (p<0.000). The BSAT indicated that 10 of current smokers and 5 of never smokers had a higher risk on obstructive sleep apnea (p<0.001). Eight of current smokers had habitual snoring and 4 of current smokers had apnea. Cigarette smoking is dependent to alcohol and tea-coffee usage (respectively, p=0.02, p=0.011). In stepwise regression analysis, the nicotine dependence status (FTT score) was associated with the mean PSQI score >5 and with high risk status of BSAT (respectively, p=0.015, p=0.043).

Conclusion: Cigarette smoking affects the quality of sleep adversely and increases the risk of sleep apnea. Also, during smoking cessation, relieving these disturbances should make quitting easier and prevent relapses.

**P3861**

Obstructive sleep apnea and periodontitis among patients attending primary health care setting in Jordan.

Basheer Khashawneh, Rola Al Habashneh, Yousef Khader.

Aim: To determine the association between periodontitis and the high risk for obstructive sleep apnea (HR-OSA).

Methods: 296 males with a mean (SD) age 40 (8.5) years were enrolled. Participants completed the Berlin questionnaire (BQ) after periodontal examination. Periodontitis was defined as the presence of four or more teeth with one or more sites with pocket depth (PDD) ≥4mm and clinical attachment level (CAL) ≥3mm. OSA risk was assessed using BQ. Scoring positive in two or more categories of Berlin questionnaire was considered HR-OSA.

Results: Based on the BQ, 15% of patients were considered as at HR-OSA. Patients with HR-OSA showed higher mean score of PPD and CAL compared with those with low risk for obstructive sleep apnea (LR-OSA) (2.35 (0.69) vs. 1.97 (0.34) p=0.006) and (2.95 (0.82) vs. 2.12 (0.55) p=0.000, respectively). The extent of periodontitis as assessed by CAL was significantly higher among patients with HR-OSA. Patients with HR-OSA were more likely to have periodontitis (OR = 2.3 (95% CI: 1.03, 5.10)) compared to patients with LR-OSA. Prevalence of periodontitis varies significantly only among patients according to their response to category 1 (37% in those responded positive and 20% in those responded negative) (p=0.003). When the OSA variable was replaced by the individual categories (1, 2, and 3), patients with positive category 1 (OR=2.27, 95% CI: 1.14,4.4.5) were more likely to have periodontitis compared to patients with negative response. Periodontitis risk in HR-OSA patients doubles that of LR-OSA and 3), patients with positive category 1 (OR=2.27, 95% CI: 1.14,4.4.5) were more likely to have periodontitis compared to patients with negative response. Periodontitis risk in HR-OSA patients doubles that of LR-OSA.

Conclusion: Habitual snoring was a risk factor for periodontitis. Further studies are needed to clarify this relationship.

**P3862**

Effects of a lifestyle intervention in obese obstructive sleep apnoea patients treated with CPAP.


Objectives: To investigate the effect of a moderate-intensity lifestyle intervention (HIIT) on sleep parameters, BMI, sleep quality, and body composition in patients with obstructive sleep apnea (OSA) treated with continuous positive airway pressure (CPAP).

Methods: Participants were randomised to either an intervention group (n=30) or control group (n=30). Assessments occurred at week 0, week 13 and week 26. The intervention involved supervised exercise sessions, dietary advice and behaviour change counselling between weeks 0 and 13. Changes in body habitus and walking distance (ISWD) between week 0, 13 and 26 were assessed using a mixed-design factorial ANOVA and 95% confidence intervals (CIs) of the net change in groups over time.

At 13 weeks, the intervention group improved body mass (Δ-1.7kg; P<0.001) and body fat percentage (Δ -1.1%; P<0.001) relative to the control group, although CIs between groups over time indicate changes were not clinically important. Changes in heart rate (Δ -6 [-9, -2] beats min⁻¹; P=0.002) and ISWD (Δ+91 [52, 130] m; p<0.001) were possibly beneficial. At follow-up, changes in resting heart rate were likely trivial (Δ -3 [-8, 1]; beats min⁻¹; P=0.250) although ISWD was probably beneficial (Δ+110 [71, 149] m; P<0.001). These data suggest that a change towards exercise behaviour has occurred. Interventions have potential as part of the holistic management of obese OSA patients compliant with CPAP.