



Follow-up of sleep breathing disorders patients in the COVID-19 pandemic with mandibular advancement device therapy and nocturnal digital monitoring: an observational study

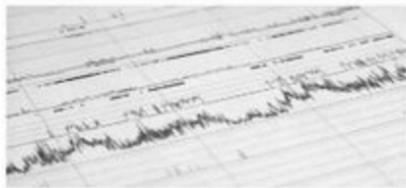
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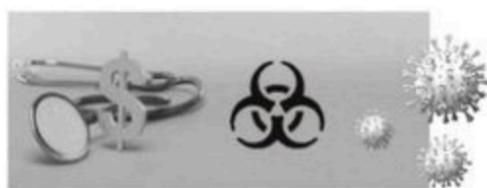
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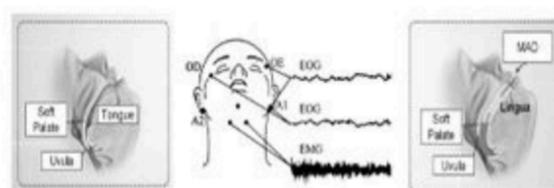
INTRODUCTION:



Type I PSG is mandatory for diagnosing and monitoring SDB patients.



Sleep test is expensive, time-consuming, and in the COVID-19 Pandemic difficult to access.



In Dental Sleep Medicine, the second PSG study is important to monitor the MAD therapy.

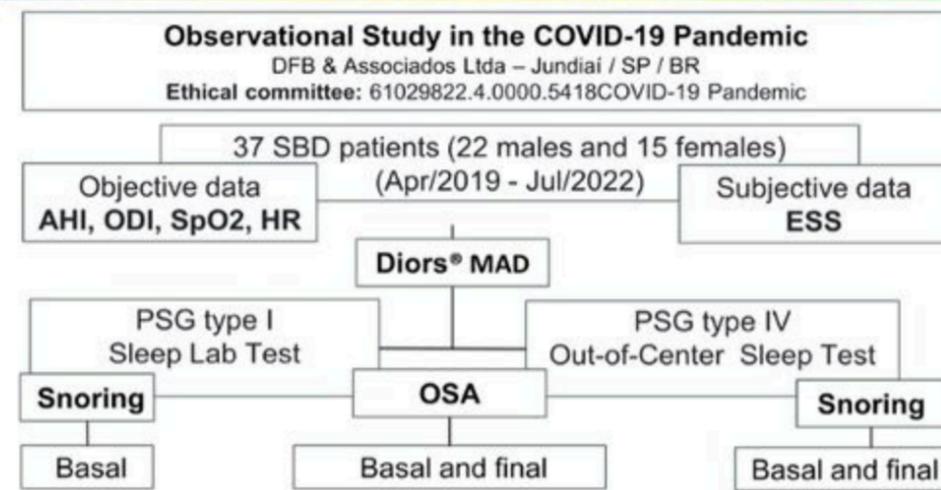


Type IV PSG NDM Biologix for DSM monitoring OSA patients is an option.

OBJECTIVE:

The main objective of this study is to evaluate the NDM in the follow-up of SDB patients clinically controlled with MAD therapy. In addition, to observe the coherence between the data, correlating both PSG studies.

METHODS:



The significance level for interpreting the parameter correlation was 5%.

Table 1. Mean (standard deviation), and Student's t statistics for two independent samples comparing the body measurements means observed in different genders.

Body measurements	Gender		Student's t statistics (p-value)
	Male	Female	
Age (years)	45.31 (11.90)	49.48 (9.40)	-1.13 (0.2644)
Body mass (Kg)	85.45 (10.80)	68.33 (10.55)	4.78 (0.0001)
Height (m)	1.75 (0.14)	1.61 (0.08)	3.24 (0.0026)
BMI (Kg.m ⁻²)	27.10 (2.78)	25.99 (3.81)	1.02 (0.3139)
Cervical waist (cm)	40.34 (2.29)	33.82 (2.14)	8.30 (0.0001)
Abdominal waist (cm)	98.58 (6.54)	89.71 (10.55)	2.98 (0.0056)
Total mandibular movement (cm)	11.32 (2.38)	9.33 (3.13)	2.19 (0.0352)
Initial MAD adjustment (cm)	0.86 (0.71)	1.13 (2.09)	-0.48 (0.6383)
Final MAD adjustment (cm)	2.75 (1.62)	2.37 (1.38)	0.75 (0.4584)

BMI = Body Mass Index; MAD = Mandibular Advancement Device

Table 2. Correlation coefficient (p-value) between heart rate measurements obtained using polysomnography type 1 and measurements obtained by polysomnography type 4.

Measurements by PSG type 4	Heart rates by PSG type 1		
	Minimum	Medium	Maximum
HR minimum	0.6751 (0.0001)	0.7398 (0.0001)	0.5901 (0.0002)
HR medium	0.6613 (0.0001)	0.7795 (0.0001)	0.5677 (0.0005)
HR maximum	0.4321 (0.0192)	0.2531 (0.1424)	0.3058 (0.0786)
SpO ₂ minimum	-0.0900 (0.6425)	-0.0273 (0.8764)	0.0567 (0.7500)
SpO ₂ medium	0.1097 (0.5951)	-0.1284 (0.4322)	0.2717 (0.1201)
SpO ₂ maximum	0.2762 (0.1469)	-0.0278 (0.8739)	0.1653 (0.3501)
ODI	-0.0290 (0.8813)	-0.0655 (0.7086)	-0.0736 (0.6792)
Time SpO ₂ < 90%	-0.2189 (0.2539)	-0.1470 (0.3994)	-0.2340 (0.1828)
Time SpO ₂ < 80%	-0.1840 (0.3393)	-0.1460 (0.4026)	0.0124 (0.9447)
DN	0.0514 (0.7913)	-0.0435 (0.8042)	-0.0570 (0.7490)

HR = Heart Rate; SpO₂ = Oxygen Saturation; ODI = Oxygen Desaturation Index; DN = Desaturation Number

CONCLUSION:

In this small sample, MAD therapy was effective, and NDM was a good tool for follow-up SDB patients for MAD monitoring, mainly during the COVID-19 pandemic.

References:

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RESULTS:

Table 1 – Participants' anthropometric data.

Graphic 1 – The SDB control with Diors® MAD and monitor with BIOLOGIX, comparing type I and IV PSG.

Table 2 – The statistically significant correlation between heart rate.

Table 3 – The statistically significant correlation between ODI and AHI of the type I and IV PSG compared to SpO₂, ODI, and AHI.

Statistic analysis - mean (standard deviation), and student t statistic for pared data using a level 1% and 5% for significance.



* Significant at level of 1% - ns: Non significant

Graphic 1: Mean (standard deviation) for paired data comparing common measurements of initial PSG Type 1 and Type 4 and Student's t-test for paired data. ** indicates significant differences at a level of 1%, and ns indicates the absence of significant differences at a level of 5% measurements.

Table 3. The correlation coefficient (p-value) between oxygen measurements was obtained using polysomnography type 1 and type 4.

Measurements by PSG type 4	Oxygen by PSG type 1			
	SpO ₂ Minimum	SpO ₂ <90%	SpO ₂ Total	AHI
HR minimum	0.16356(0.3478)	-0.12599(0.4848)	-0.26729(0.2291)	-0.26823(0.2274)
HR medium	0.23639(0.1716)	-0.14175(0.4314)	-0.34662(0.1140)	-0.33635(0.1259)
HR maximum	0.34466(0.0426)	-0.17474(0.3308)	-0.34386(0.1171)	-0.34221(0.1190)
SpO ₂ minimum	0.61197(<.0001)	-0.36749(0.0354)	-0.45456(0.0336)	-0.43954(0.0407)
SpO ₂ medium	0.32194(0.0593)	-0.41603(0.0160)	-0.43892(0.0410)	-0.42684(0.0476)
SpO ₂ maximum	0.03570(0.8387)	-0.18503(0.3026)	-0.19619(0.3816)	-0.19161(0.3930)
Time SpO ₂ < 90%	-0.57311(0.0003)	0.80768(<.0001)	0.76074(<.0001)	0.74382(<.0001)
Time SpO ₂ < 80%	0.04653(0.7907)	0.08453(0.6400)	0.01887(0.9336)	0.05018(0.8245)
ODI	-0.68613(<.0001)	0.68963(<.0001)	0.82263(<.0001)	0.81228(<.0001)
DN	-0.65241(<.0001)	0.64042(<.0001)	0.75293(<.0001)	0.73982(<.0001)

HR = Heart Rate; SpO₂ = Oxygen Saturation; ODI = Oxygen Desaturation Index; DN = Desaturation Number; AHI = Apnea-Hypopnea Index

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