

# Behavior of Dental Patients with Special Needs That Take Melatonin

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## PURPOSE

The purpose of this study is to determine if melatonin supplementation improves behavior of patients with special healthcare needs during routine dental prophylaxis and examination.

## INTRODUCTION

The AAPD defines special healthcare needs as “any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, healthcare intervention, and/or the use of specialized services or programs.” Many of these patients take melatonin supplements to improve the quality of their sleep. The Children’s Hospital of Pittsburgh outpatient dental clinic treats patients with a wide array of special health care needs. Providers are well trained in advance behavior management techniques to deliver safe and effective dental treatment. The purpose of this study is to determine if melatonin supplementation improves behavior of patients with special healthcare needs during routine dental prophylaxis and examination. Our hypothesis for this study is that patients with special healthcare needs that take melatonin behave better behavior at their dental visits, due to improved quality of sleep. The results for this study are pending data collection and analysis.

## METHODS

1. Data was collected using records from Open Dental software used by the CHP Dental outpatient clinic.
2. Patients that have special healthcare needs are blocked for one hour for their routine exam and cleanings in case advanced behavior management techniques are utilized.
3. Data was collected from all patients scheduled for one hour from January 1, 2019 through December 31, 2019.
4. Behavior was measured using the Frankl scale and was determined by the dental hygienist that performed prophylaxis on the day of treatment.
5. Other variables recorded include age, sex, medical diagnosis, and other medications taken by the patient.
6. Data was compared between groups that take melatonin and its affect on Frankl score and utilization of papoose.
7. Data was analyzed using Chi-squared test and resulting p-values were determined



Frankl Score					
Melatonin		1	2	3	4
	No	111	113	95	1
	Yes	24	15	8	2
	Total	135	128	103	3

Table 1: Chart representing Frankl scores of patients taking melatonin supplements.

Papoose Utilized			
Melatonin		No	Yes
	No	111	209
	Yes	12	37
	Total	123	246

Table 2: Chart representing melatonin usage among patients in which papoose was utilized during treatment.

## RESULTS

In the 2019 calendar year, 369 patients with special needs were blocked for extra time in the CHP Outpatient Dental Clinic for routine dental examination and prophylaxis. Demographically, 272 patients were male and 97 were female. Out of the 369 participants, 49 of them reported taking a daily supplement of melatonin. As one would expect from a special needs population, the majority of patients scored Frankl 1 (135) and Frankl 2 (128) during treatment. Data shows that melatonin had no real statistical significance ( $p=0.62$ ) when it came to improving Frankl score for treatment. The use of passive stabilization devices was also noted during the study. 246 patients required the use of papoose to complete dental prophylaxis and examination. Out of these only 37 were taking melatonin. Those patients in which a papoose was not utilized numbered 123, with only t2 taking melatonin. Again, no real statistical significance was noted between the two variables ( $p=0.99$ ). Summary of the data for Frankl Score is summarized in Table 1, while papoose utilization is reflected in Table 2.

## DISCUSSION

In a systematic review by Rossignol and Frye, six studies reported improved daytime behavior in autistic children who take melatonin supplementation. Studies reported improvements in sleep duration, sleep onset latency, and night-time awakenings. A similar study by Van der Heijden et al, it was found that melatonin increased total time sleep increase in ADHD patients who take melatonin, however, there were no statistically significant effects on behavior. Our results only measured behavior of patients who take melatonin and had no measure of sleep quality. There were no statistically significant differences between melatonin usage and behavior of patients when undergoing dental prophylaxis. The data also showed no difference between those that take melatonin vs those that do not when it comes to need for papoose for passive stabilization. Several variables could contribute to this including other medications being taken by the patient and provider bias on assigning a Frankl score. Future studies are needed for conclusive results to determine if, in fact, melatonin has any effects on patients with special needs at their hygiene visit.

## CONCLUSIONS

1. Results from our study showed no significant difference on behavior of special needs patients that take melatonin vs. those that do not.
2. No difference was found on whether melatonin supplementation affected the need for the use of papoose in patients with special healthcare needs.

## REFERENCES

1. Rossignol DA, Frye RE. Melatonin in autism spectrum disorders: a systematic review and meta-analysis. Dev Med Child Neurol. 2011 Sep;53(9):783-792. doi: 10.1111/j.1469-8749.2011.03980.x. Epub 2011 Apr 19. PMID: 21518346.
2. Van der Heijden KB, Smits MG, Van Someren EJ, Ridderinkhof KR, Gunning WB. Effect of melatonin on sleep, behavior, and cognition in ADHD and chronic sleep-onset insomnia. J Am Acad Child Adolesc Psychiatry. 2007 Feb;46(2):233-41. doi: 10.1097/01.chi.0000246055.76167.0d. PMID: 17242627.