

## **Use melatonin for sleep disturbance in autism spectrum disorders: a systematic review and meta-analysis**

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**Objective--**According to previous evidence, melatonin may be effective for sleep disturbance in children with neurodevelopmental disorders. The aim of this study was to investigate melatonin-related findings in autism spectrum disorders (ASD), including autistic disorder, Asperger syndrome, Rett syndrome, and pervasive developmental disorders, not otherwise specified

**Methods--**Our meta-analysis assessed the efficacy of melatonin on change of sleep profile during treatment. We included both published and unpublished data to evaluate the efficacy of melatonin in children with autism spectrum disorder in the analysis. We searched PubMed, Embase, the Cochrane Central Register of Controlled Trials, and Medline. We also searched ClinicalTrial.gov and reviewed the references of retrieved articles for potentially eligible trials. The last search date was on Feb 25, 2017. The data were extracted by 2 independent reviewers using a predesigned data collection form.

**Results--**We extracted data on the baseline characteristics of the study population, intervention, outcome, and study quality. Change in sleep profile was expressed as the mean difference in change of total sleep time from baseline to the end of melatonin treatment. In total, 9 studies were identified, which included 519 participants (age range 2-18 years old). Use of melatonin (2-10mg) was associated with a decrease in total sleep time (59.31 min [95% CI 26.81 to 91.80], Test for overall effect:  $Z = 3.58$  ( $P = 0.0003$ )) compared to baseline. There was substantial heterogeneity in quality across the available studies (Heterogeneity:  $\text{Tau}^2 = 2112.23$ ;  $\text{Chi}^2 = 115.78$ ,  $\text{df} = 8$  ( $P < 0.00001$ );  $I^2 = 93\%$ )

**Conclusions--**Although melatonin showed beneficial results in several clinical trials; high heterogeneity was also noted in our preliminary finding. Our findings are not sufficient to make strong clinical recommendations for melatonin to treat sleep disturbance in children of autism spectrum. The baseline disease profile, potential sex difference, level of urinary 6-hydroxy-melatonin-sulfate, dose of melatonin, lifestyle, and study design should be corrected in meta-regression or subgroup analysis.