

Does chronotherapy for essential hypertension matter by class? A systematic review and meta-analysis

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Abstract

Objectives The study was performed to evaluate the efficacy and safety of chronotherapy of hypertension with different medications monotherapy or a combination compared with traditional regimens **Methods** Three databases including PubMed, EMBASE and the Cochrane Library were searched, from the inception of each database to 10 April 2020. The Review Manager 5.4 was adopted for meta-analyses and subgroup analyses. The blood pressure delta (Δ) was used as mean of differences (MD) with 95% confidence intervals (CIs), and the estimated effect for events estimates the 95% CIs for frequency of events. The adults with essential hypertension were treated with chronotherapy and traditional regimens. **Results** Twenty-eight RCTs, recruiting 1865 patients in bedtime/evening dosing and 1867 in awakening/morning dosing, were enrolled in this quantitative review. Meta-analysis showed no significant differences for overall drug-related AEs (RR=0.81, P=0.17; I²=41%), but an obvious reduction of risk for overall withdrawals (RR=0.52, P=0.005; I²=0.0%) with bedtime dosing. No statistically significant differences were noted for clinic BP and diurnal BP, but 24-hour (48-hour) BP, nocturnal BP, morning BP, and non-dippers (%) showed obvious reductions, statistically. By class, there existed different efficacy between 2 administrations, with great decrease in nocturnal BP control and changes in circadian rhythm with RAAS blockers monotherapy, but an all-day control of BP for CCBs and diuretics. With regard to a combination, no significant differences in BP management were detected and the data about beta-receptor blockers were limited. **Conclusions** The safety and efficacy of chronotherapy in antihypertensive drugs might be based on the classes.

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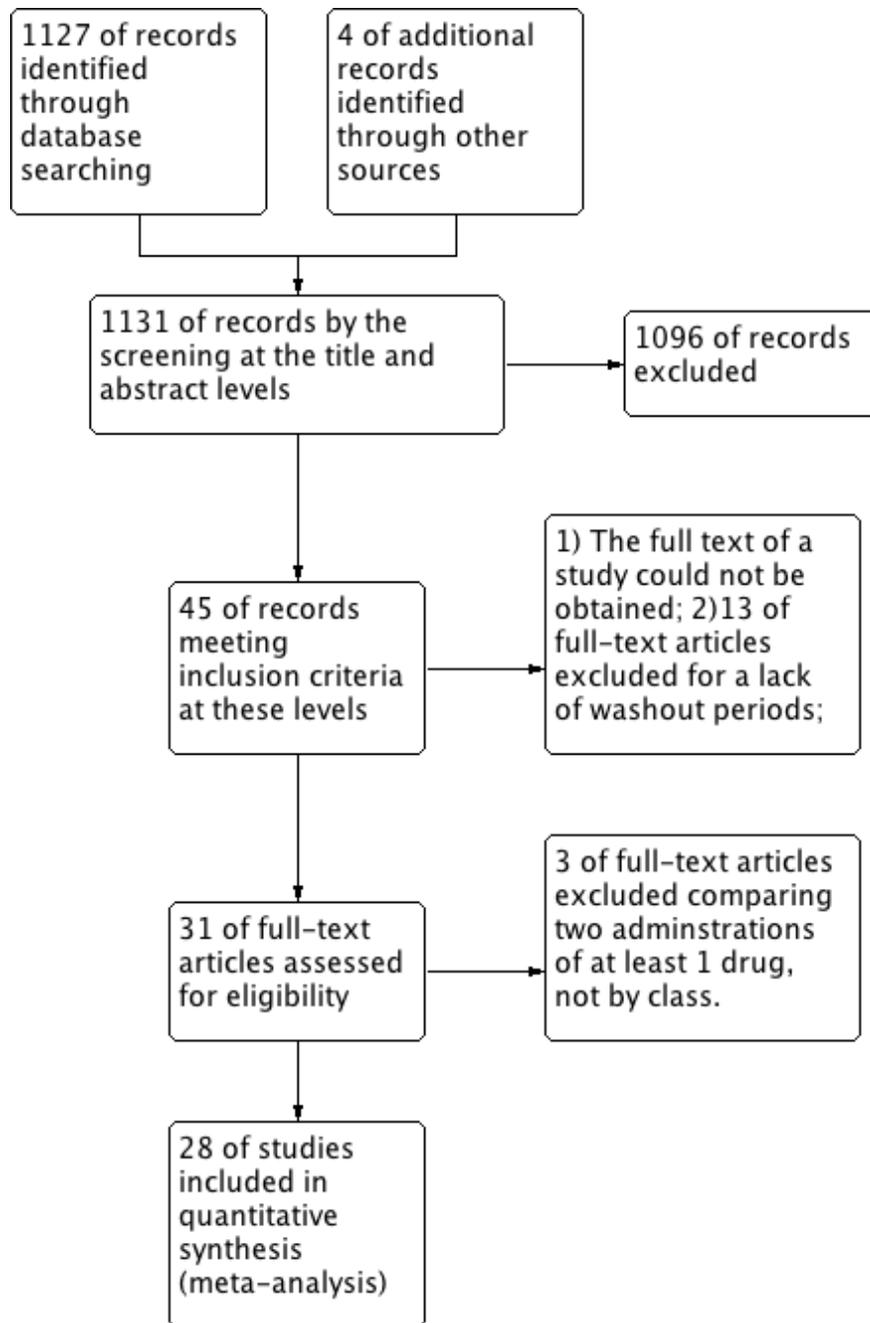
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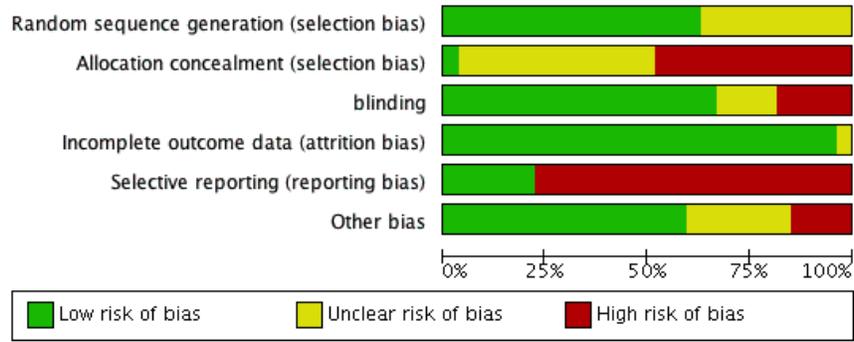
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Table 1 Included studies.pdf available at <https://authorea.com/users/405719/articles/516597-does-chronotherapy-for-essential-hypertension-matter-by-class-a-systematic-review-and-meta-analysis>

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Table 2 (safety profiles).pdf available at <https://authorea.com/users/405719/articles/516597-does-chronotherapy-for-essential-hypertension-matter-by-class-a-systematic-review-and-meta-analysis>





	Random sequence generation (selection bias)	Allocation concealment (selection bias)	blinding	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Acelajado 2012	?	?	+	+	-	?
Asmar 2011	?	?	+	+	-	?
Calvo 2006	+	-	+	+	-	+
Hermida 2003	+	-	+	?	-	+
Hermida 2005 a	+	-	+	+	-	+
Hermida 2005 b	+	-	+	+	-	+
Hermida 2007	+	-	+	+	-	+
Hermida 2007 a	+	-	+	+	-	+
Hermida 2008	+	-	+	+	-	+
Hermida 2008 a	+	- ⁴	+	+	-	+
Hermida 2009	+	+	?	+	+	+
Hermida 2009 a	+	?	?	+	+	+

