Napping on the Night Shift and its Impact on Blood Pressure and HRV among EMS Workers

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INTRODUCTION

- * EMS clinicians work night, evening, and long irregular shift schedules; report inadequate recovery between shifts, occupational fatigue, poor sleep quality (<6 hours per night).
- * Normal circadian patterns characterize a decline in BP, regulating increased HRV; decreased variability causes poor cardiovascular health.
- * Risk of cardiovascular disease and coronary events (MI) are elevated from increased night work, decreasing HRV.

HYPOTHESIS

Predicted normalization of HRV following nap time, with greatest benefit for 2hr than 30 min; BP and HRV patterns normalizing soon after nap.

METHODS

Data is acquired via a randomized control trial varying nap duration that collects measurements with a Holter monitor, ABPM BP monitor, Actigraph, ZMachine Synergy, Oscar2 device, PVT-B test; participants will complete standardized surveys at baselines throughout the study duration. All data is evaluated via RedCap.

RESULTS

Table 2 Comparing Pre-Intervention to Recovery Immediately After Nap: 3 Arms

Table 3 Comparing Pre-Intervention to Recovery Period 3p-9p: 3 Arms

* Data extracted from 6 incomplete patient data sets; not all of the 6 patients completed randomization for each arm.

* Preliminary data in variance analysis across generalized intervention periods indicates an overall decline in HRV in No-Nap and 30min-Nap Arm, with a subtle increase in HRV with 2HR-Nap arm.

* Secondary analysis of recovery period immediately following nap arms indicate a general decline in HRV in all arms, predominantly in 2 hour nap arm.

* Secondary analysis of recovery period 12 hours after nap intervention also reveals general consistency or slight decline in HRV in all arms.

* HRV should be applied in tandem with concurrent data. The data analyzed is subject to revision upon access to all data.

* For statistical power, 35 patients will be enrolled in the study. The presented data is of 6 patients. Current trends may not be indicative of study results.

RESULTS

Table 4 8 hour Sleep Analysis Pre and Post-Intervention: 3 Arms

Comparing between pre and post-intervention 8 hour sleep indicates the 2HR arm revealing the greatest increase in HRV, which averages out the subtle decline in HRV in the recovery period.

Overall generalized increase in HRV noted for 2HR sleep arm noted.

CONCLUSIONS

- * Preliminary analysis of HRV reveals a decline in HRV across all arms, predominantly in the 2HR arm.
- * This is recovered by an increase in HRV for only the 2HR, with a general decline in HRV for No-nap and 30Min-Nap interventions.
- * An overall increase in HRV for 2-HR is noted, further analysis is needed.

ACKNOWLEDGEMENTS

Patterson PD, *Napping on the night shift and its impact on blood pressure and heart rate variability among emergency medical services workers: study protocol for a randomized crossover trial, 2021.*