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Temperature-Regulated Mattress Cover as A Behavioral Intervention for Improved Sleep Hygiene

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Introduction: Addressing sleep hygiene (SH) is often one of the first treatments for improving poor sleep. One aspect of improving SH is making your bedroom environment optimal for sleep; however, this can be challenging if the sleeping environment is uncomfortable or does not promote healthy habits. The Eight Sleep Pod is a temperature-regulated mattress cover, which may improve positive behavior changes by promoting a physiologically optimal sleeping environment. Therefore, this study investigated whether the use of a temperature-regulated mattress cover could impact SH and daytime sleepiness.

Methods: 256 adults (198 males; 42±11y) completed the 13-item Sleep Hygiene Index (SHI) and the 8-item Epworth Sleepiness Scale (ESS) at three timepoints: before using the Pod (i.e. Pod-OFF; no temperature regulation), after using the Pod for one week and one month (i.e., Pod-ON; 6/1/2024-3/1/2025). Pearson *r* correlations assessed SHI and ESS scores as a change score from Pod-OFF to Pod-ON vs. Pod-OFF, and ANOVAs were used to analyze temporal differences in survey responses.

Results: Global SHI scores improved by 4% after one-week and 16% after one-month Pod-ON; global ESS improved by 7% after one-month of Pod-ON (both $P<0.05$). Those with worse SH and sleepiness during Pod-OFF experienced the largest improvements with Pod-ON (both $r=-0.34$; $P<0.05$). After one-week of Pod-ON, subjects reported improved bed comfort (11%), reduced stress, negative emotions (-12%) and thinking, planning, or worrying at bedtime (-9%; all $P<0.05$). After one-month of Pod-ON, all improvements persisted (20%, -17%, -17%, respectively, all $P<0.05$). Additionally, subjects rated their sleeping environment 23% better (e.g., lighting, temperature, sound), reduced excess time in bed, (-11%) and decreased work at bedtime (-12%, $P=0.01$).

Conclusion: A continuously temperature-regulated mattress cover is an effective behavioral intervention to improve SH and reduce daytime sleepiness, especially for individuals with poor SH and excessive sleepiness. After using the Pod, subjects reported reduced work at bedtime, lower emotional distress, and improved bed comfort and bedroom environment. Altogether, sleeping on a temperature-regulated mattress cover can support healthier sleep behaviors within just one week.