Exploring the uncertain relationship between lunar phases and human sleep duration and quality: A narrative literature review

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Introduction

• There is evidence for lunar influence in other organisms: Fireemc® nightja lays its eggs during the full moon in September and uses the extra light for greater foraging time.1
• A handful of reviews from the early 2000s concluded there was not sufficient evidence for a lunar influence on sleep quality in humans.2,3
• That conclusion stood until a retrospective study in 2013 by Capochni et al. discovered that sleep quality decreased in their subjects during the days surrounding the full moon4
• Several studies5-8 were published in response to Capochni et al, but despite having larger sample sizes and null findings, they varied greatly in data collection and research methods.
• However, other studies, also with larger samples managed to find statistically significant interactions between lunar phases and human sleep.1,9,10
• Despite the varied evidence, the moon still has a strong presence in public culture today and continues to be blamed for poor sleep or behavioral issues.2

Method (Cont.)

• (2) Studies needed to include human participants in some manner. Those studies which were only about other organisms were not included.
• (3) Studies needed to include some measure of sleep quality, either subjective or objective, relative to lunar phase.
• (4) Studies needed to be primarily interested in relationships between the moon and health individuals. Those articles which studied those with medical or psychological disorders exclusively were not included. 
• Figure 1 shows the delineation of articles throughout the literature search.

Method

• Academic Search Complete, Web of Science, PsyARTICLES, PsycINFO, and Psychology Database were the five databases used for this literature review.
• Keywords: sleep, moon, (lunar cycles), and (circadian rhythms)
• Articles were excluded if they did not fit the following inclusion criterion:
  (1) Articles must include actual experimental procedures, commentaries, literature reviews, and other non-experimental works were noted for reference and discussion but not included in the literature review.

Results

• 18 papers were found in total
• 12 experiments for review
• 6 reviews, commentaries, etc for discussion and background
• Studies measured populations from 21 different countries
• Of the 12 studies:
  • 6 used EEG equipment as objective measures for sleep6,8,11
  • 5 used actigraph data12,13-14
  • 1 used sleep diaries exclusively15
  • 5 Used a sleep laboratories3,7,9,10,11
  • 3 of these found significant interactions4,11

Results (Cont.)

• 7 studies rejected their null and found statistically significant interactions between lunar phase and sleep15-21
• 6 found shorter sleep duration around full moon16-18,21
• Durations ranged from 5 min-31.5 min
• Sleep Latencies Ranged from 5-40.5 min
• I found greater sleep duration around full moon22
• Participants in hunter-gatherer societies had higher sleep duration during full moon and decreased nighttime activity22

Table 1: Comparison of study characteristics between 12 experiments

| Country | Study Design | Sample Size | Sleep Metrics | LaboratoryBridge | Significance
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Conclusions

• Despite the revival of research regarding the connection between lunar phases and human sleep, studies have yet to find conclusive, reproducible results.
• This largely due to the immense variation in tools and measurements used throughout the studies.
• Many of those which rejected the null measured different variables and did not take place in a laboratory which was relevant to confounders.
• Even those 7 studies which did reject their null and found statistically significant interactions had great variance between amount of sleep disturbance.
• We currently know that around 1/3 of US adults gets less than the recommended hours of sleep each night; this figure jumps to 2/3 in adolescence.
• With the evidence currently available, it is impossible to determine whether the moon’s influence on sleep is just an old legend or if it actual results in clinically significant sleep disturbances.
• Future studies will need to consider comprehensive objective sleep measures between subjects in the lab and at home, as well as measuring for any significant performance deficits in daily life which result from these disturbances.

References


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