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Brief Communication

Do we really want more sleep? A population-based study evaluating the strength of desire for more sleep ☆

Clare Anderson *, James A. Horne

Sleep Research Centre, Department of Human Sciences, Loughborough University, Leicestershire LE11 3TU, UK

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Abstract

Objective: The sleep literature increasingly points to an apparent chronic sleep debt in the general population. We investigated this by examining perceived shortfalls in daily sleep, using more indirect questioning methods.
Methods: To determine perceived sleep deficits, 10,810 adults completed a simple questionnaire, which avoided leading questions and provided information on sleep length, daytime sleepiness, desired sleep length, a choice of attractive daytime activities in a "free hour", and "stressful lifestyle". From this we assessed whether deficits were reflected by increased daytime sleepiness or opting for more sleep when given attractive waking alternatives. Respondents were divided according to age and sex.
Results: Half of men and women seemed to desire more sleep, but this apparent sleep deficit was not correlated with daytime sleepiness, for any age or sex group. Irrespective of deficit, few people opted for sleep when given waking alternatives. "Stressful lifestyle" was independently related to this sleep deficit.
Conclusion: Desiring more sleep may also be synonymous with a need for more "time out", as sleep deficit was unrelated to daytime sleepiness but rather related to "stressful lifestyle." Extra sleep may not be the only anodyne for sleep deficit.

Keywords: Sleep deficit; Daytime sleepiness; Sleep need; Stress

1. Introduction

Seemingly, society is becoming sleepless, with many healthy adults chronically having insufficient sleep [1–3] but being unaware of daytime sleepiness [4]. It may be why many people can sleep beyond their usual daily norm and yet seem to desire more sleep [5]. However, the average 7–7.5 h sleep has changed little, historically [6–11], and "hidden" sleepiness is mostly only detectable by super-sensitive measures [4]. While the individual desire for more sleep may be indicative of an accruing sleep debt, for some this desire may simply reflect a need for more "time out" [5]. We assessed the perceived need for more sleep by avoiding leading questions, and determined how real the need seemed in terms of increased daytime sleepiness and in respondents opting for more sleep when given attractive alternatives.

2. Method

As part of a national BBC TV programme, "How to sleep better", an interactive website was established jointly by the authors and the BBC, inviting participants to anonymously complete a short, simple sleep questionnaire limited to 10 questions and oriented toward evaluating perceived sleep deficits. These questions assessed actual versus desired amounts of sleep. Resulting differences were compared with (i) usual

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* Corresponding author. Tel.: +44 0 1509 223005; fax +44 0 1509 228480.
E-mail address: c.anderson@lboro.ac.uk (C. Anderson).

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levels of daytime sleepiness, and (ii) a choice of attractive daytime activities (including "more sleep") if given an extra free hour. Data were collected before programme transmission.

The questions and possible responses included the following:

1. Do you feel you have a problem with sleep? (yes, no, sometimes)
2. What is your age? (years)
3. What is your sex?
4. What time do you normally fall asleep on a normal day? (hh:mm)
5. What time do you wake up on a normal day? (hh:mm)
6. What best describes your work hours? (normal daytime, evening work, nightshift, rotating shifts, not applicable)
7. How much sleep do you feel you need each night? (h)
8. If you had an extra hour in the day, how would you prefer to spend it? (playing sport/exercising; socialising; reading/relaxing; watching TV/film or listening to radio; working; sleeping; other)
9. Epworth sleepiness scale
10. Does your lifestyle often leave you feeling stressed at the end of the day? (yes, no, sometimes)

Sleep period time (SPT) was calculated from questions 4 and 5. The leading question, "How much more sleep do you need?" was avoided; information on sleep deficit was derived from the difference between Q7 and SPT. This apparent deficit was categorised into Nil ($\leqslant$0 h), Mild (0–1 h), Moderate (1–2 h) and Extreme ($\geqslant$2 h). Responses to Q8 were grouped as "inactive" (relaxing, reading, watching TV), "active" (sport, exercise, socialising) and "sleep".

2.1. Participants

A total of 13,430 respondents aged 20–65 year completed the questionnaire, which was manually screened to exclude those providing incomplete/ambiguous answers, shift workers, nightworkers, or those who were unemployed. This left 10,810 (19.51% rejection, with most [16.2%] being shift/nightworkers), who were subdivided by sex and four age categories (Table 1).

2.2. Daytime sleepiness

Daytime sleepiness was determined by the Epworth sleepiness scale (ESS [12]), assessing the likelihood of falling asleep under various circumstances. This scale overcomes the problem of respondents being unaware of sleepiness, as it gauges actual falling asleep events, which are clearly indicative of sleepiness.

3. Results

All analyses of variance (ANOVAs) are two-way (sex and age). Significance levels for post-hoc Tukey tests were set conservatively at 0.001.

3.1. SPTs (Table 1)

There were main effects of age ($F = 102.45$, [3, 10,802], $p < 0.0005$) and sex ($F = 89.439$, [1, 10,802], $p < 0.0005$), although the effect sizes were small (partial eta squared: age = 0.02; sex = 0.008); there was no significant interaction. Significant outcomes from the Tukey tests showed the 20–29 year group sleeping longer than all other groups, and the 30–40 year group sleeping longer than older groups.

3.2. Perceived sleep need (Table 1)

Age ($F = 90.77$ [3;10802], $p < 0.0001$) and sex ($F = 185.41$, [1;10802], $p < 0.0001$) were again significant but with no significant interaction. Again, the effect sizes were small (partial eta squared: age = 0.2, sex = 0.17). Post-hoc tests showed younger groups to desire more sleep than both older groups.

3.3. Sleep deficit (Table 1)

Across all ages, 46.7% of men and 44% of women reported wanting the same or less sleep than actually achieved. For men, the average deficit was 25.1 min (standard error (SE) = 1.7 min), and for women 28.8 min (SE 1.7 min). There was a significant sex effect ($F = 7.29$, [1;10802], $p < 0.007$, partial eta squared = 0.001) but no effect of age ($p = 0.05$) nor any interaction ($p = 0.56$).

3.4. Subjective daytime sleepiness – ESS (Table 1)

Across all ages, 19.8% of men and 19.9% of women reported excessive daytime sleepiness (ESS $\geqslant$ 10). There were significant age ($F = 31.870$ [3;10802], $p < 0.0005$) and sex ($F = 43.26$, [1; 10802], $p < 0.001$) effects, but with small effect sizes (<0.01). Tukey tests showed the younger groups to have significantly lower levels of daytime sleepiness than the two older groups (except 20–29 year vs 30–39 year). However, within each sex by age group there were no significant correlations between subjective sleepiness and extent of sleep deficit (Table 1).

3.5. Choice of activity given extra hour (Q8)

Sleep deficits were compared with choices for the extra hour. Here, age bands were collapsed into two categories (20–39 and 40–65 year), as the two younger and