

Sleep habits, personal and environmental factors: a three-dimensional sleep model for Portuguese adolescents

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Objectives

- ▶ This study characterizes sleep's adolescents considering habits, self-perceptions, and knowledge, explores the factors that underline their self-perceptions, and proposes a model to an integrative approach of sleep as framework of future researches and interventions.

Methods

- ▶ **Participants:** 400 adolescents, 219 (54.8%) girls and 181 (45.3%) men; mean age = 15.33 years (SD = 1:17, Min = 13, Max = 18); enrolled in the 9th (n = 185, 46, 3%) and 11th years of education (n = 215, 53.8%) in two schools in Lisbon, selected by convenience.
- ▶ **Instrument:** Questionnaire About Sleep for Adolescents (Rebelo-Pinto, 2010), organized into three scales: sleep habits and routines, self perceptions and knowledge.
 - ▶ Sleep Habits and Routines: 18 questions 4-point Likert scale concerning the sleep habits + 6 open response questions on total sleep duration and patterns of (ir)regularity of schedules sleep, during the week and weekend-of + 4 multiple choice questions about the reasons that lead adolescents to adopt these patterns
 - ▶ Self perceptions about Sleep: 5 questions 5-point Likert scale related to subjective and emotional aspects: self-assessment of sleep quality, importance attributed to sleep, difficulties, concerns and knowledge about sleep + 5 open response questions to justify quantitative responses
 - ▶ Knowledge about Sleep: 20 dichotomous questions related to: consequences of sleep deprivation, adequate duration, physiology, schedules and rhythms, substances and activities related to sleep
- ▶ **Procedures:** Approval was requested from the School's Directors and informed consent was obtained from students. The average time to complete the questionnaire was 20 minutes. Quantitative data: analysis of descriptive statistics for the sociodemographic characteristics of the sample, and the results obtained regarding the characterization of habits, self perceptions and knowledge of sleep participants. Qualitative data: procedures of content analysis (Bardin, 2004) - (i) pre-analysis, (ii) exploitation of material, and (iii) treatment of the results, inference and interpretation.

Results

Habits, self-perceptions and knowledge: quantitative study

Table 1. *Sleep duration and regularity: descriptive analysis (n=400)*

	Week		Weekend		(Ir)regularity
	M (SD)	Min-Max	M (SD)	Min-Max	M (SD)
Awakening hour	7h24 (41m)	5h25-8h70	11h27 (2h10)	6h50-17h50	4h04 (2h08)
Bedtime hour	23h29 (1h22)	21h00-03h00	01h06 (2h03)	22h00-07h50	2h18 (1h54)
Total sleep time	7h41 (1h13)	3h00-11h00	9h46 (1h47)	2h50-14h00	2h06 (1h49)

There is a marked irregularity whether in awake (4h04m) and bedtime (2:18 a.m.) and total sleep duration (2:06 a.m.).

Table 2. *Reasons for insufficient sleep: ordering and percentages (n = 400)*

	Environment	Emotions	Activities
Week	Noises – 43.4% Tv until late – 41.6% Internet until late– 33.2% Cellphone – 31.4% Temperature – 15.2% Light– 6.7%	Thinking about problems- 61.3% Concern about tests- 60.6% Concern about school– 53.6% Irritation/anxiety/sadness– 38.4% Stress – 27.2%	Sports at night – 18.2% School work – 7.7% Parties at night – 6.0% Going out with friends – 6.0%
Weekend	Tv until late – 58.9% Internet until late– 53.4% Cellphone– 35.2% Temperature – 14.0% Light– 11.7% Noises – 11.2%	Thinking about problems- 34.4% Irritation, anxiety, sadness – 19.5% Stress – 13.2% Concern about tests– 10.7% Concern about school– 1.7%	Parties at night– 46.6% Going out with friends – 39.9% School work – 8.5% Sports at night – 8.0%

60.8% of adolescents considers “not getting enough sleep” and only 14.0% reports sleeping “very well”.

On weekdays the main causes attributed to insufficient sleep are environmental. Emotional factors have the highest percentages during the week. Concerning activities, the highest percentages are at the weekend.

Participants mostly “never” consume caffeinated beverages (37.4%), tea or coffee (75.6%) or alcohol (77.3%). A large majority “never” takes medications (73.6%), and “sometimes” eats heavy foods before going to sleep (54.1%).

47.8% of the adolescents considers the sleep issue “extremely important”, 22.8% “very important” and 22% “moderately important”.

The majority considered to have “average” (45.5%), “good” (23.0%) or “very good” (n = 19, 4.8%) knowledge about sleep.

Quality, importance and attitudes: qualitative study

Sleep Quality (n=222) refers to the objective and subjective perception of the sleep organization

Importance of sleep (n=126) refers to the evaluation of sleep in emotional and behavioral terms and the daily impact

Attitudes (n=133) concern the degree of curiosity and appreciation assigned to sleep

Category	Subcategory
Quality (n=222)	Duration (n=43)
	Regularity (n=16)
	Well-being (n=78)
Importance (n=126)	Difficulties and problems (n=85)
	Daily activities (n=91)
	Feelings (n=13)
Attitudes (n=133)	Concerns (n=22)
	Knowledge (n=75)
	Interest (n=58)

Table 3. *Quality importance and attitudes: categories e subcategories of the content analysis (n=100)*

Sleep Quality has the greatest representation on participant responses, indicating that they have a perception of sleep based on sleep organization expressed in subcategories Duration and Regularity, but especially in terms of Difficulties and problems and Wellbeing, the most frequently mentioned subcategories.

Conclusions

- ▶ The importance of sleep attributed by teenagers can be considered an indicator of their receptivity to educational interventions in this area.
- ▶ Concepts relevant to the understanding and education of adolescents sleep, such as duration, regularity and autonomy of sleep, the bedroom environment and its features, the daily activities and eating habits, were identified.
- ▶ Personal, cognitive and emotional factors are especially relevant to the adolescents' sleep (e.g., knowledge about sleep, feelings and problems related to it).
- ▶ The organization of these concepts provides a conceptual scheme for research and educational intervention in this area.
- ▶ The research project continues with the validation of the model presented, the construction of instruments to assess its dimensions and application to different age groups.

Figure 1. *Proposal of a three-dimensional model about adolescents' sleep*

