Sleep Hygiene and Sleep Quality in Italian and American Adolescents

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ABSTRACT: This study investigated cross-cultural differences in adolescent sleep hygiene and sleep quality. Participants were 1348 students (655 males; 693 females) aged 12–17 years from public school systems in Rome, Italy (n = 776) and Southern Mississippi (n = 572). Participants completed the Adolescent Sleep-Wake Scale and the Adolescent Sleep Hygiene Scale. Reported sleep hygiene and sleep quality were significantly better for Italian than American adolescents. A moderate linear relationship was observed between sleep hygiene and sleep quality in both samples (Italians: R = .40; Americans: R = .46). Separate hierarchical multiple regression analyses showed that sleep hygiene accounted for significant variance in sleep quality, even after controlling for demographic and health variables (Italians: R^2 = .38; Americans: R^2 = .44). The results of this study suggest that there are cultural differences in sleep quality and sleep hygiene practices, and that sleep hygiene practices are importantly related to adolescent sleep quality.

KEYWORDS: adolescence; sleep hygiene; sleep quality

INTRODUCTION

Previous research has shown that sleep difficulties are common during adolescence. Furthermore, poor or inadequate sleep is associated with negative outcomes, including daytime sleepiness, emotional dysfunction, and behavioral problems.[1] Sleep hygiene may be importantly related to adolescent sleep quality; however, this relationship has not been well explored. The purpose of the present study was to (1)

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TABLE 1. Sample characteristics for Italian and American students (N = 1348)

	Italian (n = 776)	American (n = 572)	Statistics
Age[a]	14.6 (1.60)	14.6 (1.60)	
Sex (% male)	54.5	41.2	$\chi^2 = 29.1$, $P < .001$
Race (% Caucasian)	99.6	21.7	$\chi^2 = 887.2$, $P < .001$
SES[a,b]	4.5 (1.40)	5.1(0.61)	$t = 6.3$, $P < .001$
Medications (%)	5.5	18.2	$\chi^2 = 58.9$, $P < .001$
Illnesses/disabilities (%)	8.6	16.8	$\chi^2 = 20.5$, $P < .001$
Pubertal status[a]	3.1 (0.56)	3.2 (0.56)	
Circadian preference[a]	26.3 (4.12)	26.0 (4.36)	

NOTE: SES = socioeconomic status.
[a]Mean (Standard Deviation).
[b]Occupational scoring for head of household (1 = unskilled to 9 = professional)

compare the sleep hygiene practices and sleep quality of adolescents from two industrialized societies, Italy and the United States; and (2) investigate the relationship between sleep hygiene and sleep quality in both samples.

METHODS

Participants were 1348 adolescents (655 males; 693 females) aged 12–17 years (M = 14.6; SD = 1.6). Data were collected from public school systems in Rome, Italy (n = 776; response rate = 83.3%) and Southern Mississippi (n = 572; response rate = 57.4%). As shown in TABLE 1, samples did not statistically differ in mean age, pubertal status, and circadian preference. Participants completed the following pencil-and-paper self-report measures:

(a) *Self-Rating Scale for Pubertal Development*[2]—This 5-item scale provides an overall measure of physical maturation. Pubertal Development Scale scores range from 1 (not yet started) to 4 (seems complete).
(b) *Morningness/Eveningness Scale*[3]—This 10-item measure of circadian preference produces scores ranging from 10 (extreme evening) to 43 (extreme morning).
(c) *Adolescent Sleep-Wake Scale (ASWS)*—The ASWS is a 28-item measure of the following sleep quality domains: Going to Bed, Falling Asleep, Maintaining Sleep, Reinitiating Sleep, Returning to Wakefulness. Sleep quality scores range from 1 (very poor) to 6 (very good).
(d) *Adolescent Sleep Hygiene Scale (ASHS)*—The ASHS includes 33 items that assess sleep hygiene practices along several conceptual domains (Physiological, Cognitive, Emotional, Sleep Environment, Substances, Bedtime Routine, Daytime Sleep, Sleep Stability, and Bed Sharing). Sleep hygiene scores range from 1 (very poor) to 6 (very good).

RESULTS

Reported sleep hygiene was significantly better ($P < .001$) for Italian (M = 4.5, SD = .57) than American adolescents (M = 4.0, SD = .61). Likewise, Italian students reported significantly better ($P < .001$) sleep quality than American students (M = 4.4, SD = .53; M = 4.0, SD = .71, respectively). A moderate linear relationship was observed between sleep hygiene and sleep quality in both samples (Italians: $R = .40$, $P < .01$; Americans: $R = .46$, $P < .01$). Separate hierarchical multiple regression analyses were performed on the samples to control for variables that may account for these relationships. The variables entered in step 1 included demographic characteristics [age, sex, race (Americans only)], SES, medication/illness status, pubertal status, and circadian preference. For both samples, variables in step 1 explained a significant proportion ($P < .001$) of the variance in sleep quality [Italians: $R^2 = .18$, $F(7, 747) = 24.09$; Americans: $R^2 = .25$, $F(8, 553) = 23.13$]. Sleep hygiene (ASHS) scores were added in step 2. The total variance explained was significantly increased [Italians: $R^2 = .35$, $F(9, 738) = 21.52$; Americans: $R^2 = .41$, $F(9, 544) = 16.12$]. Sleep hygiene was responsible for significant variance above that accounted for by variables entered in step 1 (17% for Italians; 16% for Americans). A final hierarchical multiple regression analysis with all cases (both samples combined) showed that geographic location (Italy vs. the United States) only explained an additional 1% of the variance in ASWS scores after controlling for sleep hygiene and all other variables.

DISCUSSION

This study suggests cultural differences in sleep quality and sleep hygiene practices during adolescence. The results also indicate that sleep hygiene practices are importantly related to sleep quality. Further research is needed to determine if practicing good sleep hygiene will result in improved sleep quality, reduced daytime sleepiness, and better daytime functioning during adolescence.

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