Original Article

Siesta and sleep patterns in a sample of adolescents in Greece

Emmanouil Paraskakis,1 Thomas Ntouros,2 Michail Ntokos,3 Ourania Siavana,2 Maria Bitsori1 and Emmanouil Galanakis1
1Department of Paediatrics, University of Crete, Crete, 2General Hospital of Filaiates, Filaiates and 3Health Centre of Paramythia, Paramythia, Greece

Abstract  Background: Sleep behaviors and disturbances in adolescence are being increasingly investigated. The aim of the present study was to investigate the sleep habits of adolescents living in provincial Greece.

Methods: Responses to pre-constructed questionnaires on sleep habits and disturbances from 471 high-school students (259 boys; 212 girls), aged 14–18 years, attending four high schools of rural and semi-urban areas in north-western Greece, were analyzed.

Results: The median nocturnal and total sleep duration was 7.5 h (range, 2.5–11 h) and 8.5 h (range, 2.5–14 h), respectively, and the average bedtime was 23.55 hours. Male students, older adolescents and residents of towns went to bed later than female students, younger adolescents and residents of villages (P = 0.039, P = 0.0003 and P = 0.056, respectively). Siesta on a regular basis was reported by 43% and on an occasional basis by 46% of the students. Siesta median duration was 1.5 h (range 0.5–4.5 h). Daytime sleepiness, difficulties in morning awakening and in falling asleep, and night awakenings were reported by 26.3%, 17.4%, 17.2% and 11.2%, respectively. Students who had siestas reported less daytime sleepiness (P < 0.0001). Significant differences were observed between boys and girls regarding sleep disturbances.

Conclusion: Adolescents in provincial Greece present with a different sleep pattern as compared to their northern European peers, characterized by late bedtime and midday siesta. Similarly to their peers in other countries, considerable rates of sleep disturbances were reported.

Key words adolescents, Greece, siesta, sleep disturbances, sleep habits.

The importance of sleep for restorative function, especially during periods of brain maturation, has long been recognized.1 Sleep behaviors and disturbances are being increasingly investigated in most countries of northern Europe and America.2-6 Sleep problems in childhood are highly associated with somatic and psychiatric disorders,7,8 and interfere with behavior and school progress.4,11 Adolescence is a period of key biological changes, including sleep regulation and a period of significant differences in sleep habits as compared to other age groups.4,11 Adolescents seem to require more sleep than prepubertal children but they often have to sleep less, and considerable rates of sleep problems have been reported.1,4 In a large study from four European countries, approximately 25% of healthy adolescents were found to have insomnia symptoms and 4% had a Diagnostic and Statistical Manual of Mental Disorders (4th edn; DSM-IV) insomnia disorder.4

The Mediterranean area is characterized by different climate and sleep cultural background. Limited studies have indicated considerable differences in sleep patterns in this area as compared to northern European countries.12,13 The aim of the present study was to investigate the sleep habits of adolescents in Greece, in comparison to adolescents in other European countries.

Methods

Sample

The study population consisted of 471 Greek adolescents (212 female, 259 male), aged 14–18 years (mean ± SD, 14.9 ± 0.7 years) They were all students in four high schools of rural and semi-urban areas of Epirus in north-western Greece. According to 2001 National Census data, in Epirus the population of this age group is 21 577 adolescents, mostly (70%) resident of rural and semi-urban areas. Adolescents with a chronic disease or those on regular medication were excluded from the study.

Method

During the first trimester of 2005 students completed an anonymous, pre-constructed questionnaire consisted of 44 questions, which included demographic details and information about sleep habits and problems. The frequency of sleep habits or disturbances was expressed as often, sometimes, rarely or never having the habit or disturbance. Subjects were asked to use usual weekdays and not include weekends or holidays. One of the study investigators was present to provide clarifications when needed. The procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 1983.
Sleep problems were defined by the self-reported response ‘quite often’ or ‘sometimes’ in the relevant questions and their prevalence is given in Table 3. Daytime sleepiness was the most common sleep disturbance and was more prevalent among girls. Similarly, girls reported more frequent night awakenings and insomnia symptoms. In contrast, boys reported more frequent difficult morning awakening and snoring during nocturnal sleep. Comparison of the present results with those of similar studies from Europe, USA and Asia is given in Table 4.

**Discussion**

The sleep pattern of the present adolescent population is characterized by late bedtime and increased prevalence of midday nap. Greek adolescents presented with a very late median bedtime (23.55 hours), and this is in accordance with the findings in Greek adults. In northern European countries the reported mean bedtime was 22.07 hours and 22.21 hours for female and male adolescents, respectively. Interestingly, the mean duration of nocturnal sleep was almost the same with that of adolescents in UK, France and Germany. Moreover, the total sleep duration was higher than that recorded in other Europe countries due to the considerable duration (median 1.5 h) of the midday nap in the present population.

Siesta seems to be common among the adolescents in Greece, and the proportion of Greek adults who regularly have siesta during weekdays has been reported to be even higher. Comparable rates of siesta have been reported in Israel and Mexico. In France the siesta practice does not exist and this is an indication of how small differences in climate or geographical location can affect sleep habits. The tendency of certain populations, mainly living at latitudes close to the equator, to nap during the daytime has been attributed to climatic and light conditions.

The precise role of siesta in sleep patterns, behavior and general health has not been clarified. In populations that practice siesta it seems that the midday nap is a substantial component of sleep and not a consequence of night sleep deprivation nor correlated with increased daytime sleepiness. To our view, the finding that during siesta dreaming and snoring are both recorded might imply that the midday sleep is not a short nap due to excessive sleepiness but a structured sleep time with similar features (and problems) with the night sleep (i.e. dreaming, snoring). Moreover, it has been shown that siesta reduces sleepiness, improves performance level and maintains daytime vigilance. In the present study, students having siesta presented with less daytime sleepiness,
and midday nap was not correlated with any of the sleep disturbances. These findings suggest that siesta is a sleep habit of a normal population and not the result of a disturbed sleep cycle. But other studies have demonstrated an association of evening circadian preference, characterized by midday nap and late bedtime, with snoring, behavioral and emotional problems and poor school performance.5,12 Similarly to studies from Mexico,20,21 the present results suggest that siesta did not affect the duration of nocturnal sleep. Interestingly, the frequency of snoring among Greek adolescents was found to be very close to that recorded in Italy,4,8 and USA,24,25 where siesta is not a common practice.

The present study confirms previous findings that sleep problems are not rare in healthy adolescents.3,4 Despite the different criteria between studies, sleep problems have been reported with an estimated prevalence of up to 25–43% in healthy children and adolescents,26,27 and higher prevalence rates have been observed for children and adolescents with psychiatric, behavioral or emotional disorders, such as attention-deficit–hyperactivity disorder,28 depression and depressive symptoms29 and post-traumatic stress disorder.30 In contrast, mood change, memory and learning deficits are known consequences of sleep deprivation.3,31 The incidence of daytime sleepiness was comparable to the incidence reported in Italy, France and Germany.4 It is remarkable that Greek adolescents have similar rates of sleep disturbances with those recorded in northern European countries, despite their different sleep patterns.4

The present study found considerable differences in sleep disturbances among girls and boys. Gender-related differences are controversially discussed in the literature. Most of the studies focus on the different hormonal and pubertal status of male and female adolescents and the difference socioeconomic status for the girls and boys in each society that affects the sleep habits.32–35 The pubertal changes, which come earlier in girls, are well known to affect sleep; around the time of puberty onset, adolescents develop an approximately 2 h physiologically based phase delay (later sleep onset and wake times) relative to sleep/wake cycles in middle childhood.36

Alcohol consumption was found to be comparably high despite the prohibition of alcohol consumption in persons younger than 18 years old in Greece and this habit affects the sleep pattern. It seems that the prohibition of alcohol consumption by adolescents is not strict and this results in a high incidence of consumption at this age.

There are some limitations that should be considered in the interpretation of the present results. We mainly focused on the sleep patterns during weekdays, and did not include weekends or holidays. The study was mainly descriptive of self-reported sleep habits and problems and did not further investigate possible associations with health or behavioral disorders. The validity of self-reported sleep disturbances is questionable, because self-report measures do not always correlate with objective measures.28 An urban population was not included. Similar study regarding the sleep habits of adults in urban and rural areas of Greece has shown that the inhabitants of rural areas had a longer duration of night and total sleep as compared with those of urban areas but no difference in siesta duration.13 In conclusion, the present study indicated a distinct sleep pattern characterized by late bedtime and regular midday nap. Siesta seems to be an important component of Greek adolescents’ sleep. Despite the different sleep habits among the adolescents living in different parts of Europe, the incidence of sleep problems is a constant finding. Increased cross-cultural pediatric sleep research is critically needed not only to improve the standard of care across nations, but to enhance basic knowledge about childhood sleep disorders.37
References