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Brief Communication

# Sleep education in medical school curriculum: A glimpse across countries

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ABSTRACT

*Background:* The objective of this study was to assess the prevalence of education about sleep and sleep disorders in medical school education and to identify barriers to providing such education.
*Methods:* Surveys were sent to 409 medical schools across 12 countries (Australia, India, Indonesia, Japan, Malaysia, New Zealand, Singapore, South Korea, Thailand, United States, Canada and Viet Nam).
*Results:* Overall, the response rate was 25.9%, ranging from 0% in some countries (India) to 100% in other countries (New Zealand and Singapore). Overall, the average amount of time spent on sleep education is just under 2.5 h, with 27% responding that their medical school provides no sleep education. Three countries (Indonesia, Malaysia, and Viet Nam) provide no education, and only Australia and the United States/Canada provide more than 3 h of education. Paediatric topics were covered for a mere 17 min compared to over 2 h on adult-related topics.
*Conclusion:* These results suggest that there continues to be very limited coverage of sleep in medical school education despite an incredible increase in acknowledgement of the importance of sleep and need for recognition of sleep disorders by physicians.



## 1. Introduction

Sleep disorders are highly prevalent in paediatric and adult populations, however, they typically go unrecognised and underdiagnosed, which can significantly impact mortality, morbidity and quality of life [1,2]. For example, studies have found diagnosis rates of less than 1% in some community settings, rates that are dramatically lower than indicated by epidemiological studies [3]. One contributing factor for this low rate of recognition is the limited education provided regarding sleep and sleep disorders in physician education [4]. Although core competencies for sleep education were identified back in 2003, there seems to be continued limited education in this area [5].

The only two studies to date, which investigated the inclusion of education about sleep and sleep medicine, were conducted in 1979 and again in 1990 [2,6]. The latter study found that less than 2 h of sleep education was typically provided during medical school and approximately 30% of schools provided no formal education. Furthermore, surveys of practicing physicians and paediatricians find greatly limited sleep knowledge, thus further emphasising the need for education on sleep and sleep disorders during medical education. The few studies that have been conducted in countries outside the United States have found little knowledge about sleep. For example, 160 physicians attending a pulmonary conference in Pakistan were found to have very limited knowledge of sleep apnoea [7], a group of 215 physicians in Turkey received an average score of 47% on a knowledge questionnaire on sleep [8], and a third study noted that only 15% of 209 physicians in Saudi Arabia had ever even attended a lecture on sleep [9]. Clearly, there is a great need for advancement of sleep education in medical education.

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Thus, to investigate the current status of the inclusion of sleep education in medical school curriculums, the Asia-Pacific Paediatric Sleep Alliance (APPSA) surveyed medical schools within the region. APPSA is a group of paediatric and sleep medicine specialists whose mission is to improve the understanding and management of sleep and sleep-related disorders in children across the Asia-Pacific region. The primary aims of this study were to: (1) assess the prevalence of sleep education about sleep and sleep disorders in medical school education and (2) identify barriers to providing such education.

## 2. Methods

A brief survey was sent to the dean's office of medical schools in 10 countries in the Asia-Pacific region, including Australia (AU; $n = 19$), India (IN; $n = 21$), Indonesia (ID; $n = 41$), Japan (JP; $n = 80$), Malaysia (MY; $n = 15$), New Zealand, (NZ, $n = 2$), Singapore (SG; $n = 2$), South Korea (KR; $n = 41$), Thailand (TH; $n = 15$) and Viet Nam (VN; $n = 13$). We also surveyed medical schools in the United States and Canada (US–CA; $n = 160$) as a comparison.

The survey (see Appendix A) was based on questionnaires used in previous studies [2,10]. The first section asked about the amount of time allocated to sleep education in six domains (cardiology, ENT/otolaryngology, neurology, respiratory/pulmonology, physiology/behavioural sciences and psychiatry/psychology) for adults and in paediatrics. The second section asked what sleep topics were covered in seven areas (circadian rhythm disorders, hypersomnia, insomnia, paediatric sleep disorders, parasomnias, sleep apnoea and sleep-related movement disorders) for adults and in paediatrics. Finally, the respondents were asked to identify if any of the following barriers occurred if sleep was not included in their curriculum (insufficient time, lack of trained staff/qualified instructors, lack of resources, lower priority or not relevant to the programme). In total, the survey included 18 questions and took approximately 3–5 min to complete.

This study was approved by an Institutional Review Board. Depending on the country, surveys were completed on paper or online. All medical schools were contacted two or three times, with follow-up calls attempted to many of the medical schools.

## 3. Results

### 3.1. Response rate

One of the most striking findings was the lack of response. Overall, only 25.9% of the medical schools contacted ($n = 106$ of 409) responded. By country, response rates ranged from 0% to 100%; specifically Australia (31.58%; $n = 6$ of 19), India (0%; $n = 0$ of 21), Indonesia (7.32%; $n = 3$ of 41), Japan (52.50%; $n = 42$ of 80), Malaysia (33%, $n = 5$ of 15), New Zealand (100%, $n = 2$ of 2), Singapore (100%; $n = 2$ of 2), South Korea (31.7%; $n = 13$ of 41), Thailand (13.33%; $n = 2$ of 15), United States/Canada (20.63%; $n = 33$ of 160), and Viet Nam (15.38%; $n = 2$ of 13).

**Table 1**
Sleep education.

| Country | AU $n = 6$ | ID $n = 3$ | JP $n = 42$ | KR $n = 9$ | MY $n = 5$ | NZ $n = 2$ | SG $n = 2$ | TH $n = 2$ | VN $n = 2$ | US–CA $n = 33$ | Total $N = 106$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specialty topics (% of respondents reporting covering each topic) | (%) | | | | | | | | | | |
| Cardiology (adult) | 17 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 21 | 9 |
| Cardiology (paediatric) | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 5 |
| ENT/otolaryngology (adult) | 33 | 0 | 9 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 11 |
| ENT/otolaryngology (paediatric) | 33 | 0 | 14 | 0 | 0 | 0 | 50 | 50 | 0 | 9 | 12 |
| Neurology (adult) | 17 | 0 | 7 | 0 | 0 | 50 | 50 | 0 | 0 | 42 | 19 |
| Neurology (paediatric) | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 4 |
| Respiratory (adult) | 67 | 0 | 26 | 67 | 0 | 100 | 50 | 0 | 0 | 58 | 41 |
| Respiratory (paediatric) | 50 | 0 | 2 | 0 | 0 | 50 | 50 | 50 | 0 | 18 | 12 |
| Physiology/behaviour (adult) | 67 | 0 | 33 | 22 | 0 | 0 | 0 | 0 | 0 | 21 | 26 |
| Physiology/behaviour (paediatric) | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 4 |
| Psychiatry/psychology (adult) | 17 | 0 | 31 | 89 | 0 | 50 | 50 | 0 | 0 | 46 | 37 |
| Psychiatry/psychology (paediatric) | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 9 | 5 |
| | (Mean/Median) | | | | | | | | | | |
| Total (mean minutes) | 369 | 0 | 117 | 137 | 0 | 165 | 195 | 105 | 0 | 187 | 146 |
| Total adult (mean minutes) | 319 | 0 | 106 | 137 | 0 | 135 | 180 | 0 | 0 | 160 | 128 |
| Total paediatric (mean minutes) | 50 | 0 | 11 | 0 | 0 | 30 | 15 | 105 | 0 | 27 | 17 |
| Total (median minutes) | 300 | 0 | 68 | 120 | 0 | 165 | 195 | 105 | 0 | 180 | 90 |
| Total adult (median minutes) | 300 | 0 | 68 | 120 | 0 | 135 | 180 | 0 | 0 | 180 | 68 |
| Total paediatric (median minutes) | 31 | 0 | 0 | 0 | 0 | 30 | 15 | 105 | 0 | 0 | 0 |
| Sleep topics (% respondents reporting covering each topic) | (%) | | | | | | | | | | |
| Circadian rhythm disorders (adult) | 33 | 0 | 36 | 0 | 0 | 0 | 50 | 0 | 0 | 55 | 34 |
| Circadian rhythm disorders (paediatric) | 50 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 20 |
| Hypersomnia (adult) | 67 | 0 | 43 | 44 | 0 | 0 | 50 | 0 | 0 | 67 | 46 |
| Hypersomnia (paediatric) | 33 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 13 |
| Insomnia (adult) | 67 | 0 | 36 | 89 | 0 | 50 | 100 | 50 | 0 | 70 | 51 |
| Insomnia (paediatric) | 33 | 0 | 17 | 0 | 0 | 0 | 0 | 50 | 0 | 12 | 13 |
| Parasomnias (adult) | 17 | 0 | 12 | 67 | 0 | 50 | 0 | 0 | 0 | 21 | 19 |
| Parasomnias (paediatric) | 50 | 0 | 31 | 78 | 0 | 50 | 0 | 100 | 0 | 33 | 35 |
| Sleep apnoea (adult) | 100 | 0 | 41 | 78 | 0 | 100 | 50 | 0 | 0 | 79 | 56 |
| Sleep apnoea (paediatric) | 33 | 0 | 29 | 0 | 0 | 50 | 50 | 50 | 0 | 27 | 25 |
| Sleep related movement disorders (adult) | 83 | 0 | 33 | 44 | 0 | 100 | 0 | 0 | 0 | 70 | 45 |
| Sleep related movement disorders (paediatric) | 17 | 0 | 14 | 0 | 0 | 0 | 0 | 50 | 0 | 9 | 10 |
| Paediatric sleep disorders | 67 | 0 | 48 | 56 | 0 | 0 | 0 | 100 | 0 | 58 | 47 |

*Note:* percentages presented are the percentage of respondents in each country that indicated a topic is covered in their curriculum.
Zeros indicate that respondents reported no coverage of sleep education in general or for a specific topic.