

SCIENTIFIC INVESTIGATIONS

Improving sleep medicine education among health professions trainees

Stephanie R. Wappel, MD¹; Steven M. Scharf, MD, PhD¹; Larry Cohen, DDS²; Jacob F. Collen, MD³; Brian D. Robertson, MD⁴; Emerson M. Wickwire, PhD¹; Montserrat Diaz-Abad, MD¹

¹Department of Medicine, University of Maryland School of Medicine, Baltimore, Maryland; ²Department of General Dentistry, University of Maryland School of Dentistry, Baltimore, Maryland; ³Department of Medicine, Uniformed Services University of the Health Sciences, Bethesda, Maryland; ⁴Department of Pediatrics, Uniformed Services University of the Health Sciences, Bethesda, Maryland

Study Objectives: Despite increasing recognition of its importance, sleep medicine education remains limited during medical training. We sought to assess the baseline knowledge of a group of health professions trainees and to determine whether an educational sleep medicine “boot camp” led to improvement in sleep medicine knowledge.

Methods: Participants attended a 2-day introduction to sleep medicine course designed for new sleep medicine fellows in July 2017 and 2018. Participants completed 2 validated sleep knowledge questionnaires (The Assessment of Sleep Knowledge in Medical Education and The Dartmouth Sleep Knowledge and Attitude Survey) prior to and at the conclusion of the course.

Results: A total of 21 health professions trainees including 14 sleep medicine fellows completed both presurveys and postsurveys. Baseline Assessment of Sleep Knowledge in Medical Education Survey score was 21.4 ± 3.4 out of 30 (71.4% ± 11.4%) and baseline Dartmouth Sleep Knowledge and Attitude Survey score was 16.1 ± 2.4 out of 24 (67.3% ± 9.9%). There was no difference in baseline scores between sleep medicine fellows and other health professions trainees. There was a statistically significant improvement in the Assessment of Sleep Knowledge in Medical Education Survey (2.9 ± 2.1 points, P = .004) and Dartmouth Sleep Knowledge and Attitude Survey (2.5 ± 3.0 points, P = .001) scores among all participants after the course, without a difference in degree of improvement among sleep medicine fellows compared to other health professions trainees.

Conclusions: Our findings suggest that baseline sleep medicine knowledge is higher than previously reported among health professions trainees. An educational sleep medicine boot camp improved knowledge even in a group of learners with high baseline knowledge and interest in sleep medicine, including new sleep medicine fellows.

Keywords: sleep medicine, education, boot camp, fellowship, trainees

Citation: Wappel SR, Scharf SM, Cohen L, et al. Improving sleep medicine education among health profession trainees. *J Clin Sleep Med.* 2021;17(12):2461–2466.

BRIEF SUMMARY

Current Knowledge/Study Rationale: Studies have demonstrated low baseline knowledge in sleep medicine among medical professionals at all levels of training, with the exception of practicing sleep medicine physicians. This may lead to a gap in knowledge among new sleep medicine fellows and other health professions trainees.

Study Impact: An intensive sleep medicine education course provided annually at the beginning of fellowship led to improvement of baseline knowledge in sleep medicine fellows and other health professions trainees interested in the field.

INTRODUCTION

Despite increasing recognition of the negative impact of poor sleep quality and untreated sleep disorders, exposure to sleep medicine education remains limited at all levels of medical training. One survey of medical schools across 12 countries including the United States revealed an average of less than 2.5 hours of formal instruction on sleep medicine during medical school.¹ Sleep medicine is not a core educational requirement for several primary specialties, including internal medicine and family medicine. Some neurology residencies and pulmonary and critical care medicine fellowships do not require formal sleep medicine training other than a few hours of didactics, even though these specialists are often expected to treat patients with sleep disorders in their practice.^{2,3}

It is possible that limited educational exposure during the early years of training may lead to a lack of interest in formal sleep

medicine training. There is a decreasing number of sleep medicine subspecialists in the United States, as board-certified sleep medicine physicians are retiring at a greater rate than those graduating from fellowship programs³; however, this trend may be reversing. While for 2012–2016 an average of 98 fellows matched into sleep medicine fellowships each year, for 2017–2020 the average was 143 fellows, including a record number of 165 (92.2%) fellows for 2021.^{4,5} Specialized sleep medicine fellowship programs provide well-rounded clinical experiences with diagnosis and management of a variety of sleep disorders, but it is concerning that medical trainees, including those entering these fellowship programs, may not have received sufficient sleep medicine education during medical school or residency.

Two well-validated tools to assess sleep medicine knowledge among medical professionals are The Dartmouth Sleep Knowledge and Attitude Survey (Dartmouth)⁶ and The Assessment of

Sleep Knowledge in Medical Education Survey (ASKME).⁷ The problem of limited sleep medicine knowledge among physicians and medical trainees across multiple settings is well described in the literature,⁸⁻¹⁵ most often using 1 of these 2 surveys, which have been shown to be effective tools in detecting a change in knowledge level after an educational intervention.

The sleep medicine fellowship program at the University of Maryland developed a curriculum of core sleep medicine topics, “Maryland Sleep Boot Camp,” to be provided over a 2-day course during the orientation period for new fellows. The course is also made available to other interested health professions trainees. In this study, we sought to assess the baseline sleep medicine knowledge of a cohort of health professions trainees including sleep medicine fellows who attended the Maryland Sleep Boot Camp in 2017 and 2018 and to evaluate whether there was a change in knowledge following the Boot Camp course intervention using the Dartmouth and the ASKME surveys.

METHODS

Development of the Maryland Sleep Boot Camp

In 2007 the University of Maryland established a one-year Accreditation Council for Graduate Medical Education-accredited sleep medicine fellowship program with 2 fellows-in-training per year. Educational activities include a weekly 1-hour multidisciplinary didactic conference throughout the year. Following this schedule, it would take approximately 3 months to cover core sleep medicine topics. During this time, fellows would continue to evaluate patients in clinic with multiple sleep disorders on which they had not received a formal didactic lecture. The program leadership identified the need for a more rapid introduction to the fundamentals of sleep medicine to facilitate the integration of the new fellows into clinical care and developed a curriculum of core lecture topics to provide during their orientation period to achieve this goal. This core curriculum took the form of an intensive 2-day immersion course provided in early July at the start of each fellowship year.

This course, known as the Maryland Sleep Boot Camp, was first conducted in 2013 and has since been provided on an annual basis. Other sleep medicine programs in the Baltimore/Washington, DC area were invited to participate, fellows to attend the program and faculty to present didactic topics. Currently all 5 academic training fellowship programs in the covered geographic area participate. Thus, the Boot Camp has become a regional multi-institutional collaboration among the host institution, University of Maryland Medical Center, as well as Walter Reed National Military Medical Center, Johns Hopkins Hospital, George Washington University Hospital, and MedStar Georgetown University Hospital. Although designed specifically for sleep medicine fellows, the course is provided free of charge to other interested health professions trainees and health care professionals. Attendees have included pulmonary and critical care medicine fellows, internal medicine residents, family medicine residents, medical students, dental students, nurse practitioners, sleep technologists, psychologists, among others. In collaboration with the University of Maryland School of Dentistry, the course is held in a state-of-the-art large lecture hall,

and the content is recorded for future reference. A course satisfaction survey is performed each year for quality improvement. After receiving informal feedback from multiple participants over the years about the educational value of the course, we decided to perform a formal assessment of baseline sleep medicine knowledge and improvement for the 2017 and 2018 courses.

Course curriculum

The Maryland Sleep Boot Camp curriculum is presented in a series of short 30- to 45-minute lectures delivered over 2 days. Topics include sleep physiology, polysomnography scoring, how to take a sleep history, principles of sleep hygiene, out-of-center sleep testing, actigraphy, overviews of each of the 6 main categories of sleep disorders¹⁶ and other miscellaneous topics. Core topics are maintained each year, with some year-to-year variation in the curriculum and speakers. The schedule for the 2017 Boot Camp is provided for reference (see supplemental material).

Participants and procedures

The University of Maryland Institutional Review Board approved this study of previously collected data (HP-00086318). All attendees of the Boot Camp in July 2017 and July 2018 were asked to participate. Upon arrival to the course, attendees were provided with a folder that included 2 copies of each questionnaire labeled as pre-activity and post-activity evaluation. The questionnaires had a prewritten 2-digit identification number so pre-results and post-results could be matched to the same individual; to maintain full anonymity, no link to which number was assigned to which individual was kept. Participants filled out the questionnaires immediately preceding and immediately following the conclusion of the course. Only participants who attended the entire course and completed both the pre-course and post-course questionnaires were included in this study. All questionnaires were anonymous; the only information requested was to list whether the participant was a sleep medicine fellow, and if not, to describe their current level of training. Attendees were also given a survey to evaluate their satisfaction with different aspects of the course. The evaluation portion used a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Surveys

Two well-validated tools to assess sleep medicine knowledge among medical professionals were used. Presenters were not aware of the content of these 2 surveys and did not tailor their lecture content to address these questions.

The Dartmouth Sleep Knowledge and Attitudes Survey

The Dartmouth Sleep Knowledge and Attitude Survey (Dartmouth) consists of 24 multiple choice questions within the content areas of basic science of sleep (architecture, ontogeny, neurochemistry/anatomy, pharmacology, function, sleep deprivation, homeostasis, and chronobiology) and clinical science (evaluation, major dyssomnias, sleep-wake schedule disorders, parasomnias, and secondary sleep disorders). Each question has

4 answer choices. The “attitudes” part of this survey was not included in this study.⁶

The Assessment of Sleep Knowledge in Medical Education Survey

The Assessment of Sleep Knowledge in Medical Education Survey (ASKME) consists of 30 true/false questions in 6 general domains: basic sleep principles, circadian sleep/wake regulation, normal sleep architecture, sleep disorders, effects of drugs and alcohol on sleep, and sleep in medical disorders. In addition to “true” and “false” answer choices, there is an alternative response of “I don’t know” to minimize guessing or random responding.⁷

Statistics

Data were collected and collated. Baseline and post-course questionnaire scores were calculated for the group as a whole and then divided into 2 groups: sleep medicine fellows and other health professions trainees. Data was presented as mean ± standard deviation. The mean scores of the pretests and posttests were compared using Student’s *t*-test. In addition, the mean scores at baseline of sleep medicine fellows vs the rest of the group were compared using Student’s *t*-test. A significance level of 5% was required to reject the null hypothesis. SigmaPlot version 14 (Systat software, 2017, San Jose, CA) was used to perform statistical analysis.

RESULTS

A total of 24 participants who attended the 2017 and 2018 Boot Camp completed the pretests. Three were excluded because they did not attend the full 2-day course and did not complete the

posttest. All participants (n = 21) who attended the full course completed both the pretest and posttest. Of these 21 participants, 14 were sleep medicine fellows. The 7 others were pulmonary and critical care medicine fellows (2), internal medicine residents (2), medical student (1), nurse practitioner (1), and no answer (1).

Table 1 demonstrates the pretest and posttest scores among all participants. The baseline score on the ASKME among all 21 participants was 21.4 ± 3.4 points out of 30 (71.4%). The posttest score was 24.3 ± 2.6 points (81%) showing a statistically significant improvement (*P* = .004). The baseline score on the Dartmouth among all 21 participants was 16.1 ± 2.4 points out of 24 (67.3%) with significant improvement to 18.6 ± 2.0 points (77.6%) following the course (*P* = .001).

Table 2 compares the baseline scores and percent change among sleep medicine fellows vs other participants. The mean baseline ASKME score among sleep medicine fellows was no different from other participants (21.6 vs 21.0 points, *P* = .69). There was also no difference between baseline Dartmouth scores for sleep medicine fellows vs other participants (16.4 vs 15.6 points, *P* = .45). While both groups improved their scores in the posttest, there was no difference in the degree of improvement in either questionnaire score when sleep medicine fellows were compared to the other participants. There was an 8.4% improvement in the ASKME score among sleep medicine fellows compared to a 12% improvement among other participants (*P* = .28). Likewise, there was a 7.8% improvement in the Dartmouth scores among sleep medicine fellows, compared to a 15.6% improvement among other participants (*P* = .18).

All participants expressed a high level of satisfaction with the quality and content of the course and answered 4 or 5 on the Likert scale for each question on the course evaluation. The only exceptions were 2 scores of 2 out of 5 for the question regarding

Table 1—Test scores for all participants before and after the Maryland Sleep Boot Camp.

Test	Pretest Score	Posttest Score	Change in Score	<i>P</i> for Change in Score
ASKME	21.4 ± 3.4	24.3 ± 2.6	2.9 ± 2.1	.004
Dartmouth	16.1 ± 2.4	18.6 ± 2.0	2.5 ± 3.0	.001

Data presented as mean ± standard deviation; n = 21. ASKME = The Assessment of Sleep Knowledge in Medical Education Survey, Dartmouth = The Dartmouth Sleep Knowledge and Attitude Survey.

Table 2—Comparison of baseline scores and percent change in scores after the Maryland Boot Camp between sleep medicine fellows and other participants.

	ASKME	ASKME	Dartmouth Baseline	Dartmouth
	Baseline	Percent Change		Percent Change
Sleep medicine fellows	21.6 ± 2.9	8.4 ± 6.0%	16.4 ± 2.3	7.8 ± 9.6%
Other participants	21.0 ± 4.4	12.0 ± 9.0%	15.6 ± 2.6	15.6 ± 16.3%
<i>P</i>	.69	.28	.45	.18

Data presented as mean ± standard deviation. Sleep medicine fellows n = 14; other participants n = 7. ASKME = The Assessment of Sleep Knowledge in Medical Education Survey, Dartmouth = The Dartmouth Sleep Knowledge and Attitude Survey.

use of audiovisual aids. The mean overall course evaluation rating was 4.92 out of 5.

DISCUSSION

In this study, we described the successful development of the Maryland Sleep Boot Camp, an annual 2-day core lecture course for incoming sleep medicine fellows. This course was established in 2013 and has grown to include all 5 fellowship programs in the Baltimore/Washington, DC area. The course is considered a valuable part of the fellowship education curriculum of all participating programs and has evolved into a successful regional multi-institutional educational endeavor. Participants gave overall excellent satisfaction scores in their review of the course. Using validated sleep medicine knowledge questionnaires, we also demonstrated the didactic value of the course. Our results show high baseline sleep medicine knowledge in this group of health professions trainees as well as a significant improvement in knowledge after completion of the course. To our knowledge, this is also the first report of baseline sleep medicine knowledge in new sleep medicine fellows.

Our results suggest that baseline sleep medicine knowledge among health professions trainees is higher than previously reported. We report a mean baseline score of 21.4 (71.3%) on ASKME among Boot Camp attendees. During the development of the ASKME survey, the overall mean percentage of correct answers was 53.8%, while sleep medicine specialists had a mean percentage correct of 85.3% and practicing physicians averaged 66.3%.⁷ A survey of 223 primary care physicians in Saudi Arabia showed a mean ASKME score of 48%,¹⁷ and preclinical students at a New York medical school averaged 39.83% correct on ASKME compared to 65.53% correct for clinical students.¹⁵ We report a baseline score of 16.1 (67.3%) on the Dartmouth, while in the original validation study, the mean score for first year medical students was 9.52 and the mean score for sleep medicine specialists was 22.21.⁶ The Boot Camp participants chose to enter sleep medicine fellowships and/or attend the course, so it is possible that they had more exposure to sleep medicine in their training than nonparticipants and/or had more interest in the field and had more baseline sleep medicine knowledge. This may have contributed to the higher scores achieved in this study compared to the previously studied groups.

Our results also show a significant improvement in sleep medicine knowledge after completion of the course. Several studies illustrate that it is feasible to improve sleep medicine knowledge with educational interventions throughout all levels of training. In 1979, Kales et al¹⁸ showed that physicians had a less than 50% correct response rate on a sleep medicine knowledge questionnaire, but this composite score increased by 59% after viewing 1 50-minute video on sleep disorders. In 1 study, 87 medical students on their 1-month neurology clerkship were randomized to a sham module or learning module, which they could take at their own pace over the course of the month.¹³ Both groups showed improvement from pretest to posttest on the Dartmouth at the end of their clerkship, although improvement in sleep medicine knowledge was significantly higher in the

intervention group. In another study, an integrated selective course for fourth year medical students led to improved knowledge of sleep medicine.¹² Overall, evidence suggests that specific education in sleep medicine can improve knowledge among health care professionals, although there is limited research in the current literature regarding physicians in post-residency fellowships. The significant improvement from pretest to posttest scores among all participants suggests that education in sleep medicine, specifically in the form of a core didactic course, leads to improvement in knowledge, which can occur even in a group with a high baseline knowledge level.

The limited exposure to sleep medicine education during residency training may lead to a lack of interest in formal training and lack of knowledge in the field. Recently, pulmonary and critical care medicine fellowship program directors were surveyed about the sleep medicine training offered in their programs. Only 43 (27%) programs responded, of whom 67% required 1 to 2 months of sleep medicine rotation and 49% provided less than 5 hours of sleep medicine didactics per year.³ This study highlighted a major concern: lack of sleep medicine education and clinical training even in higher level training programs where there is significant overlap with the primary specialty. This also suggests that the majority of physicians have had limited exposure to the field prior to their first day of sleep medicine fellowship. Increasing exposure to sleep medicine at all aspects of medical training has been shown to pique interest in the field as a career option. A study in 2013 showed that neurology residency programs that offered more training in their curriculum, included sleep medicine faculty and access to a sleep center, had a greater chance of their residents pursuing further training in sleep medicine.² While for several years a significant number of sleep medicine fellowship slots had gone unfilled,³ this trend may be reversing, as demonstrated by an increasing interest of medical trainees in pursuing subspecialty training in the field, with a record number of 165 (92.2%) sleep medicine fellowship positions filled in the National Residency Matching Program for appointment year 2021.^{4,5} Many factors may have contributed to this trend, including the increased recognition of both sleep medicine as a distinct subspecialty and of the importance of good sleep for overall wellbeing. The American Academy of Sleep Medicine has also implemented for many years a very comprehensive plan to foster the growth and development of Accreditation Council for Graduate Medical Education-accredited sleep medicine fellowship programs and increase interest in the field among medical students, residents, and fellows.¹⁹ These efforts have been highly successful, as demonstrated by the increased number of fellowship programs and available positions, increasing from 53 programs and 99 positions in 2012 to 86 programs and 179 positions in 2021.^{4,5}

Our study suggests that health professions trainees, other than current sleep medicine fellows, have an active interest in the field. Making an introductory course widely available in an institution may increase the number of medical trainees who pursue a career in this subspecialty and may also broaden sleep medicine knowledge and interest among other specialties and health care professionals and improve patient care. Of note, 3 residents who previously attended the Maryland Sleep Boot Camp later became sleep medicine fellows at our institution. In recognition of the

potential benefits for a boot camp approach, the Sleep Medicine Fellowship Directors Council at the American Academy of Sleep Medicine started providing in 2019 an abbreviated boot camp to a limited number of incoming fellows during the annual SLEEP Meeting.

It is important to note several limitations to this study. First, due to the relatively small sample size, we were unable to do a detailed subanalysis of the different domains/categories of sleep medicine knowledge in each questionnaire to see if the particular knowledge deficits in this cohort matched those found in the initial validation studies. We also did not evaluate the attitude of participants toward sleep medicine, which could be an important component of competence. There was also no control arm of participants who were provided the same questionnaires 2 days apart without the Boot Camp intervention to determine if there was any degree of self-directed learning that led to the improvement. However, each participant effectively served as his/her own control.

There was also very limited demographic information obtained for this study. Participants were only asked whether they were a sleep medicine fellow or their current level of training. It is unlikely that age or sex would affect the baseline knowledge or ability to learn from an educational intervention. However, it would be interesting to conduct the study with a larger number of participants with more detailed baseline information, such as whether the participants attended a United States or foreign medical school, their primary specialty and level of training, their level of prior sleep medicine exposure and interest, as well as their attitude toward sleep medicine, as this may affect the performance in these questionnaires.

Another limitation is that the Boot Camp faculty presenters were not provided with the ASKME and Dartmouth surveys prior to designing the content of their didactic lecture. The Boot Camp was designed to address the general core curriculum of pertinent topics in sleep medicine, so it is likely that the content of the lectures matched up with most of the material in the questionnaires. However, a few questions may not have been specifically addressed during the course. One final potential limitation is that the ASKME survey was developed in 2001 and the Dartmouth survey in 2004. While the general principles of sleep physiology and sleep disorders have not changed, the tests have not been specifically updated, so this would need to be considered when interpreting these results. However, these questionnaires are well known and validated instruments and their content is still currently used to assess sleep medicine knowledge among medical trainees and practitioners across many settings.²⁰

In conclusion, we describe the successful development and implementation of a short intensive immersion course of core sleep medicine topics designed for incoming sleep medicine fellows, done with the collaboration of 5 different fellowship programs. This is also the first report of the baseline sleep medicine knowledge in new sleep medicine fellows. Our findings show high baseline sleep medicine knowledge in a group of health professions trainees as well as significant improvement in knowledge after completion of an educational course. Education in sleep medicine, particularly in the form of an intensive immersion course, results in improvement in knowledge among health professions trainees, even among those with a high level of

baseline knowledge and is valued by those participating in the course. These results support the value of implementing such a course in the initial weeks of orientation of sleep medicine fellowship. Future research addressing the impact of such a program on clinical skills, in-service examination performance during fellowship, and performance on the sleep medicine certification examination following training would further illuminate this topic.

ABBREVIATIONS

ASKME, The Assessment of Sleep Knowledge in Medical Education Survey
Dartmouth, The Dartmouth Sleep Knowledge and Attitudes Survey

REFERENCES

- Mindell JA, Bartle A, Wahab NA, et al. Sleep education in medical school curriculum: a glimpse across countries. *Sleep Med*. 2011;12(9):928–931.
- Avidan AY, Vaughn BV, Silber MH. The current state of sleep medicine education in US neurology residency training programs: where do we go from here? *J Clin Sleep Med*. 2013;9(3):281–286.
- Schulman DA, Piquette CA, Alikhan MM, et al. A sleep medicine curriculum for pulmonary and pulmonary/critical care fellowship programs: a multisociety expert panel report. *Chest*. 2019;155(3):554–564.
- National Residency Matching Program. Match Results Statistics 2016. https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2016/03/Results-and-Data-SMS-2016_Final.pdf. Accessed May 1, 2021.
- National Residency Matching Program. Match Results Statistics 2021. https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2021/02/SMS_Result_and_Data_2021.pdf. Accessed May 1, 2021.
- Sateia MJ, Reed VA, Christian Jernstedt G. The Dartmouth sleep knowledge and attitude survey: development and validation. *Sleep Med*. 2005;6(1):47–54.
- Zozula R, Bodow M, Yacilla D, Cody R, Rosen RC. Development of a brief, self-administered instrument for assessing sleep knowledge in medical education: “the ASKME Survey”. *Sleep*. 2001;24(2):227–233.
- Rosen R, Zozula R. Education and training in the field of sleep medicine. *Curr Opin Pulm Med*. 2000;6(6):512–518.
- Kovacic Z, Marendić M, Soljić M, Pecotić R, Kardum G, Dogas Z. Knowledge and attitude regarding sleep medicine of medical students and physicians in Split, Croatia. *Croat Med J*. 2002;43(1):71–74.
- Strohl KP, Veasey S, Harding S, et al. Competency-based goals for sleep and chronobiology in undergraduate medical education. *Sleep*. 2003;26(3):333–336.
- Zaki NFW, Marzouk R, Osman I, et al. Sleep medicine knowledge among medical students in seven Egyptian medical faculties. *J Sleep Disord Ther*. 2016;5(2):100239.
- Bandla H, Franco R, Statza T, Feroah T, Rice TB, Poindexter K, Simpson D. Integrated selective: an innovative teaching strategy for sleep medicine instruction for medical students. *Sleep Med*. 2007;8(2):144–148.
- Salas RE, Gamaldo A, Collop NA, et al. A step out of the dark: improving the sleep medicine knowledge of trainees. *Sleep Med*. 2013;14(1):105–108.
- Almohaya A, Qrmlī A, Almagal N, et al. Sleep medicine education and knowledge among medical students in selected Saudi Medical Schools. *BMC Med Educ*. 2013;13(1):133.
- Ahmed N, Sadat M, Cukor D. Sleep knowledge and behaviors in medical students: results of a single center survey. *Acad Psychiatry*. 2017;41(5):674–678.
- American Academy of Sleep Medicine. *International Classification of Sleep Disorders*. 3rd ed. Darien, IL: American Academy of Sleep Medicine; 2014.
- Saleem AH, Al Rashed FA, Alkharboush GA, et al. Primary care physicians’ knowledge of sleep medicine and barriers to transfer of patients with sleep disorders. A cross-sectional study. *Saudi Med J*. 2017;38(5):553–559.

18. Kales JD, Kales A, Bixler EO, Soldatos CR. Resource for managing sleep disorders. *JAMA*. 1979;241(22):2413–2416.
19. Watson NF, Rosen IM, Chervin RD; Board of Directors of the American Academy of Sleep Medicine. The past is prologue: The future of sleep medicine. *J Clin Sleep Med*. 2017;13(1):127–135.
20. Nosetti L, Paglietti MG, Brunetti L, et al. Italian Pediatric Respiratory Diseases Society (SIMRI) Sleep Disordered Breathing Working Group. A survey around the Italian pediatric units on current clinical practice for Sleep Disordered Breathing (SDB). *Ital J Pediatr*. 2019;45(1):75.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication February 11, 2021

Submitted in final revised form May 19, 2021

Accepted for publication May 20, 2021

Address correspondence to: Montserrat Diaz-Abad, MD, University of Maryland Sleep Disorders Center, Division of Pulmonary and Critical Care Medicine, 100 North Greene Street Room 214, Baltimore, Maryland, 21201; Email: mdiaz@som.umaryland.edu

DISCLOSURE STATEMENT

All authors have seen and approved this manuscript. Work for this study was performed at University of Maryland School of Medicine. E.M.W.'s institution has received research funding from the American Academy of Sleep Medicine Foundation, Department of Defense, Merck, and ResMed. E.M.W. has served as a scientific consultant to DayZz, Eisai, Merck, and Purdue, and is an equity shareholder in WellTap. The other authors report no conflicts of interest.