





Sleep Education and Training among Practicing Clinical Psychologists in the United States and Canada

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ABSTRACT

Introduction: Clinical psychologists often treat patients with a sleep disorder. Cognitive-behavioral treatments can independently, or in combination with medical interventions, effectively improve sleep health outcomes. No studies have examined sleep education and training among practicing clinical psychologists.

Method: Actively practicing clinical psychologists were recruited through psychological associations' e-mail listservs across the United States and Canada. Respondents (N = 200) provided information about: 1) duration and format of formal sleep education and training; 2) perceived self-efficacy to evaluate and treat sleep disorders; and 3) interest in further sleep training.

Results: Clinical psychologists reported a median of 10.0 hours of didactic sleep training (range 0–130 hours) across their training or career. Ninety-five percent reported no clinical sleep training during graduate school, internship, or post-doctoral fellowship. In terms of evaluation and treatment, 63.2% reported feeling at least "Moderately Prepared" to evaluate a patient's sleep and 59.5% felt at least "Moderately Prepared" to treat a common sleep disorder (insomnia disorder). However, most endorsed using insomnia disorder treatment approaches inconsistent with empirically supported guidelines. The vast majority (99.3%) desired additional sleep training across a variety of delivery formats.

Discussion: Many clinical psychologists engaged in active patient care have received minimal formal sleep training. Despite this, they felt prepared to evaluate and treat sleep disorders. Their treatment recommendations were not aligned with evidence-based standards. This may result in a delay to, or absence of, effective treatment for patients, underscoring the critical need for sleep training among clinical psychologists. It is essential to improve sleep competencies for the field.

Introduction

Sleep is essential to our physical and psychological health. Sleep disorders are implicated in the development and exacerbation of a myriad of health conditions ranging from cardiovascular disease to depression (Zhou et al., 2019). Unfortunately, sleep disorders are common, with an estimated 50 to 70 million people in the U.S. meeting diagnostic criteria for at least one sleep disorder (Altevogt & Colten, 2006; Ram et al., 2010). Not surprisingly, an estimated 1 in 3 adults in the United States (U.S.)

do not get enough sleep (Liu, 2016) – with trends only worsening over time (Garland et al., 2018). These sleep problems are considered a global health epidemic (Stranges et al., 2012).

Clinical psychologists can play a significant role in the management of the public's sleep health as they comprise the majority of behavioral sleep medicine providers (Thomas et al., 2016). For example, clinical psychologists commonly provide the gold standard treatment for insomnia disorder (cognitive-behavioral therapy for insomnia; CBT-I) (Qaseem et al., 2016; Edinger et al., 2020). Recommended treatments for a number of other common sleep disorders (e.g., circadian rhythm sleep-wake disorders and nightmare disorders) are also non-pharmacological and often provided by clinical psychologists (Auger et al., 2015; Aurora et al., 2010; Krakow and Zadra, 2006). Furthermore, clinical psychologists often play a key role in supporting physicians in the optimal treatment of obstructive sleep apnea (Crawford et al., 2014) and narcolepsy disorder (Bhattarai & Sumerall, 2017). Next, the presence of a current or recent sleep-related issue (i.e., difficulty falling asleep, staying asleep, early morning awakenings, or non-restorative sleep) is associated with a significantly increased likelihood of having an anxiety, mood, impulse-control, or substance use disorder (Roth et al., 2006). Therefore, by virtue of their role in treating mental health disorders, clinical psychologists have opportunities to see patients presenting with a co-morbid sleep disorder. Finally, clinical psychologists have a unique opportunity to evaluate and manage sleep considering the amount of time they typically spend with a patient. Whereas a standard psychotherapy session is approximately 50 minutes, the average patient consultation with a primary care physician in the U.S. and Canada is less than 20 minutes (Irving et al., 2017). This additional time is particularly relevant given patients' low likelihood of proactively raising sleep issues with their medical providers (Sauver et al., 2013).

Despite clinical psychologists' potential to play a central role in the diagnosis and management of sleep-related presenting problems, we have limited understanding of the sleep training that they receive. In the only published study, a survey of 212 American and Canadian graduate psychology programs and internship directors revealed that only 6% of programs offered a specific course on sleep (Meltzer et al., 2009). This is not surprising given how little sleep education physicians receive as well (Mindell et al., 2013, 2011; Rosen et al., 1993). For example, one study revealed that total sleep education during medical school averaged less than 2.5 hours in programs around the world (including the U.S. and Canada) (Mindell et al., 2011).

Given the likelihood that a clinical psychologist will encounter patients with a sleep problem, and their potential role in the management of patients' sleep, it is important to gather information about the state of sleep training among actively practicing psychologists. Thus, the purpose of the current study was to examine among practicing clinical psychologists: 1) the extent of didactic and clinical sleep education across their training; 2) perceived self-efficacy to evaluate and treat sleep disorders and related problems; and 3) interest in and preferred format for additional sleep education.

Methods

Participants

Licensed clinical psychologists in the U.S. or Canada, who reported seeing at least one patient per week, were eligible to take part in the online survey. There were no study exclusion criteria.

Recruitment

The general inquiries contact e-mail address and telephone number of every state/provincial/territorial psychological association across the U.S. and Canada were identified and contacted between December 2018 and August 2019. Psychological associations were first contacted via e-mail to introduce the study and request that an IRB-approved e-mail with consent and a link to the online survey be distributed with the association's membership through their e-mail listserv. If an association did not respond to the initial e-mail contact within 3 months, a second follow-up e-mail was sent to

the same e-mail address. This was followed 1 month later by a telephone call to the publicly available general contact number in order to obtain an active e-mail address. If an active e-mail address was provided, a third e-mail was sent. Finally, study investigators asked colleagues (if available) in the non-responding state/territory/province who were active psychological association members to contact the association and request that the e-mail/survey be distributed to members.

Procedure

Once a potential participant clicked the survey link, they were presented with the sole study eligibility requirement that they be an actively practicing clinical psychologist in the U.S. or Canada, seeing at least one patient per week. After confirming eligibility and providing online informed consent, they were redirected to the sleep education and training survey. For completing the survey, participants chose one of the following charities to receive a three-dollar donation: Make-A-Wish Foundation, American Red Cross, or American Society for the Prevention of Cruelty to Animals. The study was approved by the Boston University Institutional Review Board.

Sleep survey

The survey was developed by the study authors, based on a prior study of sleep-related training in clinical psychology graduate programs (Meltzer et al., 2009). The survey collected information about the clinical psychologist's background (psychology degree type, years since licensure, state of current practice, and primary clinical population treated [adult and/or pediatric]), sleep education and training (hours of sleep education during graduate school, internship, and post-doctoral fellowship), perceptions about their ability to evaluate and treat different sleep disorders (5-point Likert scale ranging from "Not Prepared" to "Very Prepared"), initial treatment approach for insomnia disorder, and preferred formats for future sleep education/training. The survey was formatted for computer and mobile devices using Qualtrics (Provo, UT) and consisted of 13 to 15 questions (treatment approaches differ across adult and pediatric patients, thus respondents who reported treating only adult or only pediatric patients received a survey of 13 questions, while those treating both pediatric and adult populations received 15 questions). The complete survey is available from the corresponding author upon request.

Statistical analysis

Data were analyzed using descriptive statistics (frequency, mean, median, and standard deviation) to ascertain the hours and format of sleep education received by responding clinical psychologists. Data points were excluded only if they were extreme outliers (>10 SDs from mean), or text responses that did not provide usable information (e.g., "cannot remember"). Clinical psychologists' level of perceived self-efficacy in the treatment and diagnosis of sleep disorders was analyzed descriptively. Chi-square tests were performed to compare clinical psychologists who reported high versus low (median split) total duration of didactic sleep education on their level of perceived self-efficacy and first choice of treatment for insomnia disorder. Kruskal-Wallis H-tests were performed to evaluate whether the total amount of didactic sleep training clinical psychologists received differed by their degree type, primary patient population, or primary practice location. Clinical psychologists' preferences for future sleep training were tabulated. Listwise deletion was utilized for missing data.

Results

Sleep training

Survey responses were received from 200 clinical psychologists (Ph.D. and Psy.D.) whose primary practice locations were across the U.S. (Arizona, California, Colorado, Connecticut, District of

Columbia, Florida, Hawaii, Idaho, Indiana, Iowa, Maine, Massachusetts, Missouri, Nebraska, New Jersey, New York, North Dakota, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Washington, Wisconsin, and Wyoming) and Canada (British Columbia, Nova Scotia, Ontario, and Saskatchewan). The median duration of didactic sleep training across the clinical psychologists' entire career was 10.0 hours (\bar{x} = 16.8; SD = 21.8; range = 0.0–130.0). Across their career trajectory, respondents reported a median of 2.0 hours (\bar{x} = 4.1; SD = 7.8; range = 0.0–60.0) of didactic sleep training during graduate school, 0 hours (\bar{x} = 3.4; SD = 9.4; range = 0.0–80.0) during their internship, 0 hours (\bar{x} = 1.0; SD = 2.9; range = 0.0–20.0) during their post-doctoral fellowship, and 3.0 hours (\bar{x} = 8.8; SD = 15.1; range = 0–100.00) as a licensed clinical psychologist (e.g., continuing education). Twenty clinical psychologists (10.0% of the sample) had not received any didactic sleep training at any point during their career. There were no statistically significant differences in total didactic sleep training by degree type, primary patient population treated, or primary practice location (Table 1).

With respect to clinical training, nine respondents (4.5%) reported having a supervised sleep-focused clinical rotation during graduate school. Similarly, 10 (5.0%) had a supervised sleep-focused clinical rotation during internship, and 6 (3.0%) during their post-doctoral fellowship (Table 2). One hundred and ninety clinical psychologists (95.0%) reported no formal supervised sleep-related clinical rotations at any point during their training.

Table 1. Clinical psychologists' didactic sleep training (Hours).

		Median	Mean	SD	Range		
During Different Career Time Points	Graduate School (<i>n</i> = 198)	2.0	4.1	7.8	0– 60		
	Internship (<i>n</i> = 198)	0.0	3.4	9.4	0– 80		
	Post-doctoral Fellowship (<i>n</i> = 190)	0.0	1.0	2.9	0– 20		
	After Licensure (<i>n</i> = 198)	3.0	8.8	15.1	0– 100		
	Total Across All Training (<i>n</i> = 187)	10.0	16.8	21.8	0– 130		
Degree Type	Ph.D. (<i>n</i> = 128)	8.5	16.6	22.0	0– 103	Kruskal-Wallis Test χ^2	p-value
	Psy.D. (<i>n</i> = 59)	10.0	17.0	21.5	0– 130		
Patient Population Treated	Adult (<i>n</i> = 114)	10.0	17.9	21.5	0– 103	2.978	.226
	Pediatric (<i>n</i> = 23)	6.0	12.2	26.3	1– 130		
	Both (<i>n</i> = 50)	10.0	16.2	20.3	0– 102		
Practice Location	United States (<i>n</i> = 156)	10.0	16.8	20.8	0– 103	.414	.520
	Canada (<i>n</i> = 30)	7.5	17.1	27.1	0– 130		

Table 2. Clinical psychologists' clinical sleep training history.

Formal Supervised Clinical Sleep Rotation? (N = 200)		Yes % (<i>n</i>)	No % (<i>n</i>)
During Different Career Time Points	Graduate School	4.5% (9)	95.5% (191)
	Pre-doctoral Internship/Residency	5.0% (10)	95.0% (190)
	Post-doctoral Fellowship	3.0% (6)	97.0% (194)

Self-efficacy in evaluation and treatment of sleep disorders

The majority of clinical psychologists (63.2%) reported that they were at least “Moderately Prepared” to conduct a thorough evaluation of a patient’s sleep. When considering their ability to treat sleep disorders using an evidence-based approach, 59.5% endorsed feeling at least “Moderately Prepared” in their ability to treat insomnia disorder, 32.6% were at least “Moderately Prepared” to treat circadian rhythm disorders, 29.5% for sleep apnea, 23.5% for parasomnias, and 12.0% for narcolepsy (Table 3). Further, 87.5% of clinical psychologists who reported high levels of total didactic sleep education (≥ 10 hours, $n = 80$) were at least “Moderately Prepared” to evaluate sleep, compared with 42.7% of those reporting low levels of total didactic sleep education (< 10 hours, $n = 103$).

With regards to perceptions of self-efficacy at treating specific sleep disorders, 82.9% of clinical psychologists with high levels of sleep education were at least “Moderately Prepared” to treat insomnia, versus 39.0% of those with low levels of sleep education. Similar patterns were reported for confidence in treating circadian rhythm disorders (51.3% in high sleep education versus 17.7% in low sleep education), sleep apnea (42.7% in high sleep education versus 19.0% in low sleep education), and narcolepsy disorder (17.1% in high sleep education versus 8.7% in low sleep education).

Treatment approaches for insomnia disorder

The most commonly endorsed first-line treatment approach for an adult patient presenting with insomnia disorder was “sleep hygiene instruction,” selected by 64.2% of respondents (Figure 1). Other treatment approaches that were endorsed included “cognitive-behavioral therapy for insomnia” (16.8%) and “relaxation exercises” (9.2%). Further, 26.0% of clinical psychologists who reported high levels of total didactic sleep education (≥ 10 hours) indicated that CBT-I was their first-line treatment approach for an adult with insomnia disorder compared to 9.2% of those reporting low levels of total didactic sleep education (< 10 hours). For pediatric patients presenting with insomnia disorder, clinical psychologists reported they would try “sleep hygiene instructions” (71.0%), followed by “referral to a pediatrician” (8.7%) and “cognitive-behavioral therapy for insomnia” and “relaxation exercises” (both 7.2%).

Table 3. Clinical psychologists’ self-efficacy in the evaluation and treatment of sleep disorders.

When a patient reports symptoms of a sleep disorder, how prepared do you feel to conduct a thorough evaluation of their sleep? (N = 196)	Not Prepared % (n)	A Little Prepared % (n)	Moderately Prepared % (n)	Prepared % (n)	Very Prepared % (n)
How confident do you feel treating the following sleep disorders using an evidence-based therapy (as primary treatment and/or in collaboration with physicians)?	Not Prepared % (n)	A Little Prepared % (n)	Moderately Prepared % (n)	Prepared % (n)	Very Prepared % (n)
Insomnia (N = 200)	16.5% (33)	24.0% (48)	25.0% (50)	23.0% (46)	11.5% (23)
Circadian Rhythm Disorders (N = 197)	39.1% (77)	28.4% (56)	16.8% (33)	12.2% (24)	3.6% (7)
Narcolepsy (N = 200)	69.5% (139)	18.5% (37)	7.5% (15)	3.0% (6)	1.5% (3)
Parasomnias (N = 200)	45.0% (90)	31.5% (63)	9.5% (19)	12.0% (24)	2.0% (4)
Sleep Apnea (N = 200)	51.0% (102)	19.5% (39)	12.5% (25)	10.5% (21)	6.5% (13)

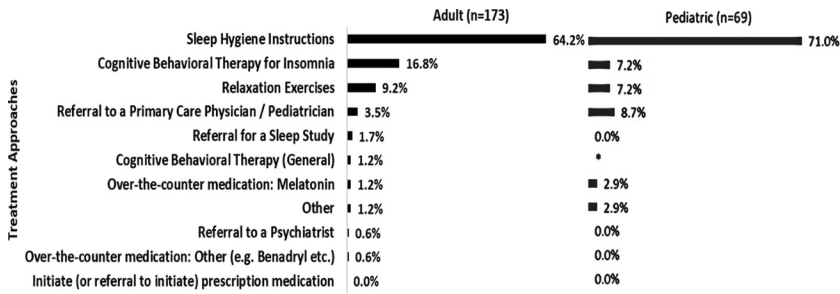


Figure 1. Initial treatment approach for insomnia by primary patient population. The treatment approach “Cognitive Behavioral Therapy (General)” was not listed as an option for pediatric insomnia.

Future sleep training

Nearly all of the sample (99.3%) indicated that they were interested in receiving additional training regarding how to evaluate and treat sleep disorders. The most commonly preferred options for further training included an “in-person seminar” (24.6%), “online video” (20.4%), and “video-conference seminar” (19.6%) (Table 4).

Discussion

As a profession, clinical psychologists are trained to provide “comprehensive mental and behavioral health care” (American Psychological Association, 2008). Across the varied clinical populations with which clinical psychologists routinely work, it is reasonable to expect that sleep-related concerns will likely play a key role in the development, maintenance, and exacerbation of their patients’ mental health and/or medical presenting problem(s) and therefore should be considered in the context of their clinical care. Given the implications for the quality of patient care, it is important to learn about clinical psychologists’ sleep-related training. To the best of our knowledge, this is the first study seeking to understand the training background of currently practicing clinical psychologists in North America.

Results from our survey of 200 clinical psychologists across the United States and Canada reveal that the majority have received minimal (if any) formal didactic or clinical sleep training. These findings can be contextualized against a survey of the directors of clinical psychology graduate programs and internships across the United States over a decade ago (Meltzer et al., 2009), where only 6% of programs reported having a specific course focused on sleep. Our findings converge to suggest that clinical psychologists trained in North America are highly unlikely to have received any formal coursework or clinical supervision in a sleep-related area by the time that they have completed their training. This dearth of sleep education is notable when compared to training for clinical psychologists in other domains where a much higher percentage report having received graduate training in sexual health (Miller & Byers, 2010) and working in a correctional facility (Magaletta et al., 2013).

Table 4. Clinical psychologists’ interest in future sleep training.

Preferred Format for Sleep Training	% (n)
In-Person Seminar	24.6% (134)
Video-Conference Seminar	19.6% (107)
Online Video	20.4% (111)
Interactive Website	18.2% (99)
Book	14.9% (81)
Other	1.7% (9)
Not Interested	0.7% (4)

Clinical psychologists were asked to check all formats that reflected their interest.

Despite their limited training background in sleep, roughly 2 in 3 psychologists indicated that they felt at least “Moderately Prepared” to evaluate a patient’s sleep and to provide evidence-based treatment for insomnia, the most common sleep disorder. However, their lack of formal sleep training may be reflected in the respondents’ preferred primary treatment approach. For example, clinical psychologists in our study overwhelmingly indicated that sleep hygiene instruction was their front-line therapy for insomnia disorder in both children and adults. Fewer than 1 in 5 psychologists endorsed CBT-I as their first option. Even among psychologists who reported at least 10 hours of didactic sleep education, approximately 3 out of 4 chose an alternative treatment first. This is a worrisome result as sleep hygiene alone is likely ineffective as a monotherapy for insomnia (Stepanski & Wyatt, 2003), while CBT-I has been consistently recommended by sleep expert panels in both the U.S. and Europe as the gold standard treatment (Qaseem et al., 2016; Riemann et al., 2017). There may be a disconnect between the providers’ actual versus perceived likelihood of providing evidence-based treatment for sleep disorders such as insomnia. Similarly, given the general lack of sleep training for much of our sample, it is notable that a sizable proportion indicate that they are at least “Moderately Prepared” to treat sleep disorders that often have a complex differential diagnosis and treatment approach (circadian rhythm disorders; 32.6%), and low prevalence sleep disorders that clinical psychologists are unlikely to frequently encounter (narcolepsy disorder; 12.0%). Offering ineffective treatments or inaccurate treatment advice could have potential negative effects on patient treatment-seeking (i.e., the belief that they have tried, and failed, front-line insomnia treatment prevents them from seeking CBT-I) and outcomes (i.e., poorly managed sleep disturbance and exacerbation of associated mental health and medical problems) and may reflect poorly on the reputations of clinical psychologists.

The lack of formal training and insufficient providers with foundational sleep knowledge are key barriers to evidence-based sleep care for patients (Boerner et al., 2015a; Sarmiento et al., 2016; Thomas et al., 2016). Thus, it is not surprising that almost all of the clinical psychologists in our survey (99.3%) expressed interest in receiving further training on the subject of sleep. They indicated that there was a range of training formats that would be acceptable, including in-person, videoconference, online videos, websites, and books. Prior work has been conducted to assess an online sleep curriculum designed for clinical psychology graduate students in a doctoral program (Peachey & Zelman, 2012). Their results were promising – students who completed the modules were better able to appreciate the contributions of sleep to mental and physical health, and demonstrated more sleep knowledge when compared to students who had not received the training. Among physicians, sleep training programs for community-based medical providers have been developed and are effective at improving knowledge and rates of sleep disorder recognition and diagnoses (Valerio & Heaton, 2014; Zozula et al., 2005).

There has been a recent push to increase the amount of sleep training a clinical psychologist receives, though this work has been done primarily outside of North America (Gomes, 2019; Meaklim et al., 2019). Since it is not necessary for a clinician to become a board certified sleep provider to provide quality patient care for sleep disorders such as insomnia (Espie et al., 2007), there has been increasing interest in understanding the core competencies that a provider must grasp (Boerner et al., 2015b) and the development of large training networks (Baglioni et al., 2019). Specifically for clinical psychologists, one avenue that could potentially result in more consistent sleep-related training would be for accrediting bodies (e.g., the American Psychological Association) (American Psychological Association, 2006) to consider sleep knowledge as an important component of profession-wide competencies. Potential ways in which this can be implemented include specifying sleep disorders/interventions as content that accredited clinical psychology programs must teach graduate students, or to include questions related to sleep disorders/interventions on licensing examinations. There have been prominent shifts in clinical psychology training as the science has evolved (Norcross et al., 2005), and given our increasing awareness that healthy sleep is a fundamental component of mental health, this would not be an unrealistic aspiration. An opportunity for such training could be the internship year, designed to enhance the clinical expertise of psychologists seeking a clinical doctoral degree. It has been reported that an average clinical psychology intern receives 11 hours of didactics per month (Zuckerman et al., 2019). Given how little sleep training clinical psychologists in our survey

have received, even a small proportion of this time dedicated to sleep topics could be meaningful, particularly when integrated with supervised clinical practice of sleep-related intervention.

We acknowledge that there are limitations of our study. Participation in the survey was voluntary and recruitment was conducted through e-mail listservs. Thus, our sample could be biased given the self-selection for participation as practicing clinical psychologists who were not members of their state's/province's psychological association would likely not have responded. Further, we are not able to determine the survey's response rate as we do not know how many clinical psychologists read, or even received, the survey invitation e-mail from their state's/province's listserv. In addition, it is possible that only those individuals with an interest in sleep would have completed this survey, which may affect the proportion of clinical psychologists who indicated an interest in learning more about sleep. Next, while we enrolled a sample from across the U.S. and Canada, we received responses from clinical psychologists in 24 states and the District of Columbia and 4 provinces, and there was an average of approximately 7 respondents per individual state/province. This means that our findings are not necessarily representative of all states/provinces or each individual practice location, and should be viewed as a picture of clinical psychology training across the continent. Finally, our respondents were asked to recall the amount of sleep training they received in the past. There is the possibility of inaccurate recall as some participants may have received their graduate training decades ago.

Behavioral sleep medicine is a relatively new discipline (Stepanski & Perlis, 2000). It has emerged as a subspecialty, particularly for health psychologists, as many of the core skills are critical to the success of interventions for patients with sleep disorders (e.g., motivating behavioral change) (Pigeon et al., 2007). However, our findings demonstrate a disconnect between psychologists' potential role as behavioral sleep medicine providers and their limited education and clinical training related to sleep. Graduate programs, internships, post-doctoral fellowships, and continuing education programs across North America should consider the introduction of training content on the subject of sleep not only as it is crucial to the overall health of the patient population clinical psychologists serve, but also because it is a highly marketable skillset that will help clinical psychologists carve out another impactful role in clinical settings. There are a number of ways to deliver this content that is acceptable for clinical psychologists and does not require substantial burden for program directors (e.g., web-based modules). Over the long term, clinical psychologists' improved awareness and skills related to empirically-supported sleep treatment will lead to better patient outcomes related to both physical and mental health.

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The authors do not have any disclosures to report

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

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