A course on cognitive and behavioural interventions for sleep disorders within a master degree programme in clinical and health psychology: The first triennium experience

Ana Allen Gomes

Abstract

Given the prevalence of sleep disorders, the efficacy and effectiveness of behavioural and cognitive interventions, mainly CBT for insomnia, we consider that a course on the topic should be introduced within the psychology master degree programmes. Since 2017/18 we are offering the optional course: Psychological Interventions on Sleep Disorders. The present work summarizes the course syllabus and analyses the students’ perceptions regarding the first three editions. One hundred and twenty psychology master degree students have voluntarily registered at the course. End-of-semester online institutional anonymous questionnaires were voluntarily completed. Participants were asked to rate the course in a variety of parameters using a 5-point scale (1 = minimum; 5 = maximum). Ninety questionnaires were completed. Mean scores on each item (addressing: bibliography/other learning materials; quality of learnings; learning results; non-redundancy concerning other courses; theoretical-practical articulation; students’ active participation in the learning processes; development of analytical and critical reflection/thinking skills; overall self-assessment) ranged between 4.23 and 4.46, items’ mean score = 4.35. Students’ perceptions on the first three semesters of the course were clearly encouraging. By offering a course on behavioural interventions for sleep disorders at master degree level, we hope to contribute to increase its delivery in health contexts in the near future.

Keywords: cognitive-behavioural therapy, psychology master degree, insomnia, sleep disorders, behavioural sleep medicine.

1 An earlier version of the current work has been presented at the congress of the World Sleep Society - World Sleep 2019 - held in Vancouver, Canada, September 20-25, and the respective abstract has been published in a supplement number of the journal Sleep Medicine (cf. Gomes, 2019). The congress presentation related expenses were partially funded by the CINEICC - FCT R&D Unit, and FPCE-UC.

2 University of Coimbra, Research Centre in Neuropsychology and Cognitive-Behavioural Intervention (CINEICC), Faculty of Psychology and Educational Sciences, Coimbra, Portugal. Email: a.allen.gomes@fpce.uc.pt. ORCID iD: http://orcid.org/0000-0002-8221-6985
Experiência de uma disciplina sobre intervenções cognitivo-comportamentais nas perturbações de sono, no âmbito da formação de mestres em psicologia clínica e da saúde: Resultados do primeiro triénio

Resumo

A prevalência de perturbações de sono e os dados sobre eficácia e efetividade das terapias comportamentais e cognitivas justificam a criação de uma disciplina dirigida a mestrando em psicologia clínica e da saúde. Desde 2017/18, oferecemos a disciplina opcional "Intervenções Psicológicas nas Perturbações do Sono". O presente trabalho pretende apresentar e contextualizar esta disciplina e analisar os primeiros resultados dos inquéritos aos estudantes. Cento e vinte mestrando em psicologia inscreveram-se na disciplina nos três primeiros anos, dos quais 90 submeteram anonimamente a sua avaliação, preenchendo online (em local e horário extra-aula) os questionários institucionais da Universidade de Coimbra. Cada item incidia num determinado aspeto da disciplina (numa escala de 1 = mínimo a 5 = máximo). As pontuações médias dos itens (contemplando: bibliografia/materiais de apoio; qualidade das aprendizagens; resultados da aprendizagem; não redundância face a outras disciplinas; articulação entre teóricas e práticas; participação ativa no processo de aprendizagem; desenvolvimento de competências; avaliação global da disciplina) variaram entre 4.23 e 4.46, média global = 4.35. Os resultados dos três primeiros anos foram claramente encorajadores. Ao oferecermos esta disciplina durante a formação de mestrado a futuros psicólogos clínicos, esperamos fomentar a tão necessária oferta da terapia cognitivo-comportamental na insónia e ainda noutros problemas de sono.

Palavras-chave: terapia cognitiva-comportamental, mestrado em psicologia, insónia, perturbações de sono, medicina comportamental do sono.

INTRODUCTION

Disturbed sleep affects a large portion of individuals. Among sleep disorders, insomnia is the most prevalent. According to the International Classification of Sleep Disorders-3, the full clinical syndrome of chronic insomnia affects around 10% of the adult population, and transient insomnia affects a much larger portion of the population, 30%-35% (American Academy of Sleep Medicine [AASM], 2014). Regarding insomnia treatment, cognitive-behavioural therapy for insomnia, known as CBT-I (as described e.g., by Bootzin & Epstein, 2011; Clemente, 2006; Edinger & Carney, 2015; Espie & Kyle, 2012; Manber & Carney, 2015; Marques et
al., 2016; Morin, 1993; Morin & Espie, 2003), has been recognized as the first line treatment, given the robust research evidence from randomized controlled trials, meta-analyses and systematic reviews (e.g., Brasure et al., 2016; Van Straten et al., 2018; Zweerde et al., 2019), consistently supporting the efficacy and effectiveness of this treatment approach (cf. Morin et al., 2017). Not surprisingly, based on research evidence, CBT has been recommended as standard treatment for insomnia disorder by the American Academy of Sleep Medicine (e.g., Schutte-Rodin et al., 2008), as the first line treatment for adult chronic insomnia by the European Sleep Research Society (Riemann et al., 2017), as the initial treatment to be offered to all insomnia patients by the American College of Physicians (Qaseem et al., 2016), and as a psychological treatment with strong research support according to the Society of Clinical Psychology, Division 12 of the American Psychological Association [APA] (cf. https://www.div12.org/treatment/cognitive-behavioral-therapy-for-insomnia/).

In addition to CBT-I, a variety of other treatments within the scope of behavioural and cognitive therapies have been developed for other sleep disorders and problems, identified within the sleep field as behavioural sleep treatments (cf. Perlis et al., 2011). As examples, one may mention behavioural interventions to prevent childhood sleep problems (such as parental management of bedtime); the controlled crying/comforting protocol to deal with persistent settling/waking difficulties in young children (Cortese et al., 2015); behavioural sleep interventions to treat clinical insomnia in children (e.g., unmodified extinction; graduated extension; bedtime pass, positive routines, cf. Roane & Taylor, 2013); image rehearsal therapy for nightmare disorders (Krakow, 2011); wake up time conditioning or “schedule awakenings” for parasomnias (cf. Ivanenko & Larson, 2013) such as sleepwalking and night terrors (Byars, 2011; Lask, 1988); “Moisture Alarm Therapy” for primary nocturnal enuresis (Warzak & Friman, 2011); CBT to improve compliance to ventilotherapy in Obstructive Sleep Apnoea (Bartlett, 2011); scheduled sleep periods (naps) as an adjuvant therapy to cope with narcolepsy daytime symptoms (Rogers, 2011); structuring sleep-wake schedules, promoting sleep hygiene practices, and avoiding bright light exposure in the evening for delayed sleep phase syndrome (Abbott et al., 2017); light therapy and chronotherapy for circadian rhythm disorders in general (such as shift work disorder, jet lag disorder, cf. Auger et al., 2015; Drake & Wright, 2017).

Even though the efficacy/effectiveness of CBT for insomnia is well-established, it contrasts with its low delivery (insomnia is underdiagnosed; and few patients are offered the CBT-I treatment). Low delivery has been a concern shared by many (e.g., Buenaver et al., 2019; Harvey & Buysse, 2018; Manber & Simpson, 2016; Perlis & Smith, 2008), and several possible solutions have been proposed (e.g., to integrate education on sleep and sleep disorders in the current psychology curriculum at
both the undergraduate and graduate levels, including during placements, cf. Ellis (2012), or internships, cf. Meltzer et al. (2009); to provide intensive training endorsed by sleep societies for individuals with masters-level credentials in mental health, cf. Fields et al. (2013), and Perlis & Smith (2008); to disseminate a transdiagnostic approach as proposed by Harvey & Buysse (2018) based on several cognitive and/or behavioural evidence-based treatments that were previously mentioned). Recently, in an effort to promote the implementation and dissemination of CBT-I, a Task Force of the European Sleep Research Society (ESRS) and the European Insomnia Network is working on deliberations and established a European CBT-I Academy to enable standardized training and accreditation training centre (Baglioni et al., 2020).

Despite the expressed concerns and efforts to accredit sleep specialists and to offer post-graduation training courses to professionals, higher education institutions’ programmes barely include normal sleep and sleep disorders in their psychology syllabus at the master degree level (cf. Ellis, 2012; see also Baglioni et al., 2020). This gap has been documented in clinical psychology graduation programs and professional internships (Meltzer et al., 2009); therefore, mental health students and professionals usually complete their degrees, internships or specialties, without benefiting from any learning about CBT for insomnia or other sleep disorders. We consider that future mental health professionals currently receiving instruction on CBT for a variety of disorders (such as anxiety, mood, obsessive-compulsive, and eating disorders, usually integrated in the master degrees curriculum), should also be given the opportunity to be instructed during their master degree level on the fundamentals of behavioural and cognitive interventions for sleep disorders (or, at least, for insomnia disorder). (Ideally, and agreeing with Ellis (2012), the study of sleep/sleep psychology should be incorporated in the psychology curriculum since the undergraduate level).

In sum, given the prevalence of sleep disorders, the efficacy and effectiveness of cognitive behavioural interventions for a variety of sleep problems, in particular cognitive-behavioural therapy for insomnia/CBT-I, and the need to promote its dissemination and delivery, we believe it is advantageous to incorporate a course on this topic within the master degree programmes in psychology dedicated to train those who will be the future licensed mental health professionals in cognitive-behavioural therapies.

By offering master degree level training for psychology students on the CBT track, who are potential upcoming providers, we hope to contribute to the important effort of disseminate and increase delivery of CBT for insomnia and sleep disorders in general.

Therefore, at our University, within the master degree in clinical psychology, we are offering one semester optional course called Psychological Interventions for Sleep Disorders (Intervenções Psicológicas nas Perturbações do Sono) (Planned designation in future editions: Cognitive-Behavioural Therapies for Sleep Disorders/Terapias
Cognitivo-Comportamentais nas Perturbações de Sono). The aims of the current work were twofold: (i) to describe the course syllabus in a summarized way; (ii) to analyse the students’ perceptions about the course based on the three first editions completed so far, relying on the pedagogical surveys conducted at the university.

THE COURSE

A summary of the course syllabus is presented in Table 1. The course is an optional/elective curricular unit offered in the first semester of the master degree in Psychology of the Faculty of Psychology and Educational Sciences of the University of Coimbra, specialty in Clinical and Health Psychology, area of expertise in Cognitive-Behavioural Interventions in Psychological and Health Disorders.

Table 1
Summary of the course syllabus

| Designation | Psychological Interventions in Sleep Disorders/(Proposed designation in future editions: Cognitive-Behavioural Therapies for Sleep Disorders) |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
| Description | This is an optional course integrated in the master degree programme in psychology of the University of Coimbra, specialty of clinical psychology, area of expertise in Cognitive-Behavioural Interventions in Psychological and Health Disorders. As prerequisites, students are supposed to possess basic notions on cognitive-behavioural models acquired in the first cycle of psychology. The course aims essentially to convey to master degree students, particularly to those specifically interested in Cognitive-Behavioural Therapies (CBT), the fundamentals of CBT for sleep disorders. |
| Learning Outcomes | As a result of this course, students are expected:  
- To describe normal sleep patterns across life span, and acknowledge inter-individual differences on sleep patterns;  
- To characterize sleep disorders (SD) (e.g., insomnias; parasomnias; disorders of the circadian sleep-wake rhythm), especially those of greater relevance for clinical psychologists;  
- To become familiar with the main classification/diagnostic systems, especially DSM-5 and ICSD-3 (international classification of SD);  
- To understand the cognitive-behavioural conceptualization for chronic insomnia; to apprehend psychological conceptualizations for other SD;  
- To describe the main assessment methods used by sleep expert psychologists;  
- To become familiar with “sleep hygiene” rules;  
- To understand the behavioural, cognitive and non-pharmacological interventions for specific SD, such as (among others): insomnia (cognitive-behavioural therapy); nightmares and other parasomnias (e.g., image rehearsal therapy); shift work, delayed sleep-phase and remaining disorders of the circadian sleep-wake rhythm (e.g., light therapy). |
Table 1

Summary of the course syllabus (cont.)

Contents overview
1. Defining sleep and the circadian sleep-wake cycle. Normative sleep-wake patterns across life span. Normal inter-individual differences.
2. Sleep Disorders and its classification (DSM-5; ICSD-3).
3. Symptoms, prevalence, aetiology, and development of SD, emphasizing the most relevant ones in clinical psychology.
4. Influential psychological models for insomnia (e.g., stimulus control model; 3Ps model / currently 4 Ps; micro-analytic model).
4.1. Other psychological conceptualizations for SD.
5. Main assessment methods used by sleep psychologists (clinical interview; scales and inventories, e.g., ISI, DBAS, PSQI, ESS; sleep diaries; actigraphy).
6. Starting the intervention: Sleep education and “sleep hygiene”.
7. Behavioural, cognitive and non-pharmacological interventions for specific SD:
   • insomnia (e.g., CBT);
   • nightmares, sleep walking, night terrors, other parasomnias (e.g., image rehearsal therapy);
   • shift work, delayed sleep-phase, other circadian rhythm sleep-wake disorders (e.g., chronotherapy; light therapy);
   • narcolepsy/hypersomnolence disorders (e.g., naps’ scheduling);
   • sleep-related breathing (e.g., CPAP adherence therapy) and movements’ disorders.
8. Prevention and intervening from infancy: promoting healthy sleep; behavioural interventions for paediatric insomnia.

Teaching / instructional methods
Classes begin with oral lectures, accompanied by slides. Thereafter, video presentations, internet sites, printed documents, etc, are used to illustrate and promote debate on specific concepts. For each SD, a clinical case is presented and discussed (e.g., excerpts of clinical histories). Furthermore, a specialist might be invited to develop on a specific topic or case discussion. Students also have the opportunity to visit the Sleep Medicine Centre at the Coimbra University Hospital Centre.

Assessment methods
1 written examination (midterm exam) (70%) + 1 field team work (30%)

Sample of essential references [to avoid repetitions, only citations are indicated here, and the complete references may be found at the end of the article]*
• American Academy of Sleep Medicine [AASM] (2014).
• Carskadon & Dement (2017).
• Hauri (n.d.).
• Moorcroft (2013).
• Morin et al. (2017).
• Morin & Espie (2012).
• Perlis et al. (2011). (Eds.).
• Perlis et al. (2017).
• Zucconi & Ferri (2014).

* Important complementary references are further recommended during classes.

Cf. https://apps.uc.pt/courses/EN/unit/85242/13423/2019-2020?type=ram&id=1174

Note. DBAS = Dysfunctional Beliefs and Attitudes about Sleep (Morin, 1993, 1994; Portuguese version: Clemente, 2013). The remaining scales identified through initials in the table are mentioned in the text.
The curricular unit comprises 6 ECTS (Bologna format) and 3.5 hours of classes per week are offered (1.5 hours being predominantly theoretical, plus two hours predominantly practical).

The learning outcomes and the content topics selected (indicated in Table 1) were inspired in great part on the definition and conceptualization of the specialty of sleep psychology recognized in 2013 by the American Psychological Association and in our previous clinical experience in sleep disorders consultation within a mental health clinic. However, differently from a professional specialty, this course is being offered at a master degree level, and not as a post-graduation one (even though we are not training sleep specialists, those who conclude this course will be much more prepared to accomplish, in the future, the remaining requisites in order to pursue such specialty). This way, we hope that the future clinical psychologists with expertise in cognitive-behavioural therapies who completed the curricular unit will have acquired a solid background on CBT for insomnia and other sleep problems and be prepared to pursue an internship at a sleep disorders clinic/laboratory.

Given that the course has been offered within the context of a master degree specifically focused in cognitive-behavioural interventions, students have the opportunity to develop, in other curricular units, a solid background for an in-depth understanding of cognitive-behavioural therapies (e.g., at the level of assessment, case formulation, and CBT protocols, in what concerns anxiety disorders, depression, obsessive-compulsive disorders, among others). Also importantly, all teaching staff at this master degree consists of integrated researchers at the Centre for Research in Neuropsychology and Cognitive and Behavioural Intervention (CINEICC) (funded by the Portuguese Foundation for Science and Technology), which has been rated with the highest possible classification in the most recent assessment by an international independent panel. As such, there is an intimate interaction between research and clinical practice.

Also of foremost importance, there are cooperation protocols formalized between the Faculty/University, and the Coimbra University Hospital Centre (CHUC), including an agreement between the Master Degree in Clinical and Health Psychology – Cognitive-Behavioural Interventions, and the Sleep Medicine Centre of the afore mentioned Hospital so that, at the second year of the master degree, two students may complete their annual curricular psychology internship at that Centre. This Sleep Medicine Centre, one of the largest in our country, comprises a multidisciplinary team (e.g., pneumology/pulmonology; neurology; psychiatry; psychology; technician), and all professionals are Sleep Specialists by the ESRS. Students doing the curricular internship benefit from the contact with all categories of sleep disorders requiring psychological intervention under the supervision
of the local psychologist who is simultaneously specialist on clinical and health psychology, and on behavioural sleep medicine.

In sum, the curricular unit is offered in a privileged curricular context, i.e., within a pre-professionalizing master degree in psychology specifically focused in cognitive-behavioural therapies, associated to a research centre dedicated mainly to CBT, rated with the highest possible classification, followed in the last curricular year by the opportunity of doing the curricular internship at a Sleep Medicine Centre associated to a University Hospital Centre.

The option is mainly dedicated to the students of the specific area of expertise of the master degree programme (i.e., CBT track); however, students in other master degree specialties may also choose the unit.

The assessment methods listed in Table 1 deserve some further details here, as they are related to the learning outcomes and to the teaching methods. In addition to an individual end-of-semester examination (comprising ~ 50 multiple choice questions), there is a practical written assignment developed by students in small groups. More specifically, for the practical assignment, students are invited to complete individually and in an anonymous way a sleep diary (*Consensus Sleep Diary*) for one to two weeks (Carney et al., 2012; Portuguese translation: Marques & Gomes, 2012), the Pittsburgh Sleep Quality Index [PSQI] (Buysse et al., 1989; Portuguese version validation study: Gomes et al., 2018), a questionnaire on sleep quality plus sleep-wake schedules and durations devised by the responsible for the unit (Gomes et al., 2015; Miller-Mendes et al., 2019); the Insomnia Severity index [ISI] (Morin, 1993; Bastien et al., 2001; Portuguese version/validation: Clemente et al., 2021); the Glasgow Sleep Effort Scale (Broomfield & Espie, 2005; Portuguese version: Meia-via et al., 2016), the Epworth Sleepiness Scale [ESS] (Johns, 1991; Portuguese version and main studies: Santos et al., 2001; Guimarães et al., 2012; Sargento et al., 2015); the Stop-Bang (Chung et al., 2008; Portuguese version/validation: Pereira et al., 2013; Reis et al., 2015); and the Composite Morningness Scale [CMS] (Smith et al., 1989; Portuguese version-successive psychometric studies: Silva et al., 1995/Buekenhout et al., 2019; Gomes, 2005; Gomes et al., 2016; Silva et al., 2016), among other possibilities. These tools are introduced gradually, accompanying the contents addressed in class, each week (e.g., the CMS is administered following the normal inter-individual differences in sleep-wake patterns topic; the ISI is introduced during the insomnia classes). After completing each instrument, students are given scoring instructions and information on how to interpret the data. This way, students have the opportunity to gain knowledge on some of the main self-report measures used in research and especially in clinical practice by sleep psychologists/behavioural sleep medicine specialists as valuable assessment tools to complement clinical interview and/or to monitor treatment outcomes.
METHODS

Participants

A total of 120 psychology master degree students have voluntarily registered at the course during the first three editions, specifically 32 at the first edition (2017/18) plus 41 at the second one (2018/19), and 47 in the academic year of 2019/20 (third edition of the course).

Measures and procedures

Data on students’ perceptions about the course was collected via institutional university anonymous questionnaires assessing the pedagogical aspects of the course (i.e., standardized online questionnaires applicable to all curricular units, distributed at the end of the semester, by the University of Coimbra).

Items used in the present study ask participants to assess the course in a variety of parameters, each rated in a 5-point scale ranging from 1 to 5, higher scores representing better quality. Questionnaire items examined for the present work were the following ones:

E. Recommended bibliography and other learning materials;
F. Overall quality of learnings;
G. Learning results;
H. Non-redundancy concerning curricular contents of other courses;
I. Articulation between theoretical and practical contents within the course;
J. Active participation of the students in the learning processes;
K. Development of analysis and critical reflection/thinking skills;
L. Students overall self-assessment.

Based on the data available separately for each academic year, we combined them in order to obtain altogether values for frequencies, means and modes. The “comments” section of the pedagogical questionnaires was also examined. This section consists of an “open box” where students may write any comment if they want. This is an optional, non-compulsory, section.
RESULTS

A total of 90 master degree students (75%) out of 120 completed the voluntary pedagogical surveys, 23 on the first edition, 26 on the second one, and 41 in the third one.

Mean scores on each item ranged between 4.23 and 4.46 (Figure 1) with most students’ answers (90.7%) falling in the categories 4 or 5 (Figure 2). Overall mode was 5, and overall inter-item average score was 4.35 (4.51 at the first edition; 4.15 at the second edition; 4.40 at the third edition).

Figure 1  
Students’ mean ratings for each course parameter (combining 2017/18, 2018/19, and 2019/20 editions)

Through the inspection of Figure 2, one may find that mode values reached 5 points in what concerns the recommended bibliography and other learning materials distributed (item E), articulation between theoretical and practical components of the course (item I), perceived learning results achieved by students (item G), and active participation in the learning processing (item J); mode values were both 4 and 5 for non-redundancy of the course contents relatively to other ones (item H). In the remaining three items, the mode was 4 – F (overall perceived quality of learnings), K (critical thinking analysis skills), and L (students’ overall self-assessment).
Figure 2
Detailed response distribution in each item (rated 1 to 5)

E: Recommended bibliography / materials

F: Perceived overall quality of learnings

G: Perceived learning results

H: Non redundancy concerning other courses

I: Articulation between theoretical & practical contents

J: Students' active participation in the learning processes

K: Development of analysis & critical thinking skills

L: Students overall self-assessment
Finally, the anonymous comments (optional section of the questionnaire) were also examined. There was a total of six comments. As to positive comments to the syllabus and course dynamics, we may emphasise the following ones:

- “The contents lectured were very interesting, well structured, and well selected. The classes were dynamic, there were clearly theoretical and practical parts, both always well organized. The idea to visit the Sleep Medicine Centre was very positive, providing us, for the first time in this school year, an approximation to the places and professionals in the area. (...) Overall, I consider this course to be the one that I evaluate most positively, and therefore I would recommend it for the next year” [2017/18 edition].
- “The visit to the Sleep Medicine Centre of the CHUC was extremely interesting, and one of the scarce opportunities that I myself had until the moment, to get in touch with the psychological practice in real contexts” [2017/18 edition].
- “Very complete and interesting curricular unit. It offers a rich perspective of sleep disorders and their possible treatments, being this an essential tool in our future. Although they are dense classes, with a lot of content, they become accessible by the fact that the subject is exposed in an objective way and taught by someone with a lot of knowledge in the area. Still about the teacher, she has always been very willing to clarify any doubts and provide the necessary help, and it is also to value her effort to bring ex-students to class, with the aim of getting us closer to the practical reality of Sleep Psychology” [2019/20 edition].

As to negative comments, the following one deserves mentioning [2017/18 edition]: “Some specific contents were also addressed at the Curricular Unit of Cognitive-Behavioural Interventions in Adults-I, becoming somewhat uninteresting for students”.

**DISCUSSION AND CONCLUSION**

Results on the first three semesters of the course were very encouraging according to students’ perceptions, considering the mean and mode values. In addition, the number of students choosing this curricular unit has been rising each academic year.

In spite of the global positive assessments, there is still room for improvement particularly in what concerns the perception of students about their overall quality of learnings, their active participation in the learning processes, their overall self-assessment, and their perceived development of analysis and critical
thinking skills (items with mode values = 4, or sporadic values below 3). Besides, the master degree programme is now being restructured, and, therefore, in the future, the course will be offered at the second semester of the academic year, instead of its current placement at the first semester. This change will make it possible to solve the small overlap that currently some students experience regarding CBT-I due to a shortened version of this specific topic being currently taught in another course called Cognitive-Behavioural Therapies in Adults-I. Thus, in future academic years, it will be possible to firstly introduce the basics about CBT-I during the compulsory course Cognitive-Behavioural Therapies in Adults-I so that, at the second semester, we may offer an expanded and detailed approach to CBT-I at the optional course of CBT for sleep disorders. As to the designation of the course, in the future editions, it will be relabelled “Cognitive-Behavioural Therapies for Sleep Disorders”.

By offering a course on CBT-I and behavioural interventions for sleep disorders at the master degree level, we believe we are contributing to disseminate this therapy and to increase the number of potential providers (upcoming clinical psychologists) and, in this way, we hope to increase the delivery of these treatments to patients in the near future. We are also contributing to improve the screening, detection and referral competencies of future mental health specialists in what concerns sleep disorders.

This is only one of the several possible ways to disseminate CBT-I and other empirically supported psychological therapies and evidence-based treatments for sleep disorders (e.g., a larger discussion of possibilities may be found in Perlis & Smith, 2008). In spite of the current existence of other ways of training mental health providers (e.g., at the University of Pennsylvania at the USA), apparently there has been a scarce offer of this kind of courses within existing graduate programs (cf. Baglioni et al, 2020, for a tentative overview of the present situation in European countries). We hope our positive experience of implementation will encourage similar courses to start within other master degrees programmes in clinical & health psychology focused in cognitive-behavioural therapies training.

ACKNOWLEDGEMENTS

To the Faculty of Psychology and Sciences of Education - University of Coimbra and its Director, Prof. António Gomes Ferreira, to the Portuguese FCT Centre for Research in Neuropsychology and Cognitive and Behavioural Intervention-CINEICC, its Scientific Coordinator Prof. Cristina Canavarro and research group coordinator
Prof. Daniel Rijo, for the support of the presentation of a previous version of the current work at the World Sleep Congress 2019 - Vancouver.

To the teaching team of cognitive-behavioural therapies at FPCE-UC, who provide a solid background and training in CBT to our master degree students. Part of them were also my teachers when I was an undergraduate and master degree student, namely Profs. Céu Salvador and Paula Matos in addition to those previously mentioned. Therefore, I feel privileged for having learnt with them.

To my colleague Dr. Vanda Clemente, clinical psychologist and Somnologist by the ESRS at the Sleep Medicine Centre (University Hospital Centre of Coimbra - CHUC), who supervises our students during their curricular placement, and to the successive SMC Directors, Dr. Moutinho and Dr. Joaquim Moita (MD and Somnologist by the ESRS), for warmly welcoming our students. To Prof. Carlos Fernandes da Silva who has cleared the way since the nineties. I am in debt to Dr. Ana Maria Ferreira (MD, psychiatrist) and again to Dr. Vanda Clemente, with whom I have learnt so much at the Sleep Disorders Consultation (Coimbra University Hospital) from 1995 to 2002 and, of course, to the founder, Professor Maria Helena Azevedo (MD and then full professor of psychiatry at the Faculty of Medicine of the University of Coimbra) who also accepted to supervise my PhD (2000-2005), enabling my continuous learning within sleep science.

REFERENCES

Abbott, S. M., Reid, K. J., & Zee, P. C. (2017). Circadian disorders of the sleep-wake cycle. In M. Kryger, T. Roth & W. C. Dement (Eds.), Principles and practice of sleep medicine. (6th ed., pp. 414-423). Saunders Elsevier.

American Academy of Sleep Medicine [AASM] (2014). International Classification of Sleep Disorders -Third Edition (ICSD-3). AASM.

Auger, R. R., Burgess, H. J., Emens, J. S., Deriy, L. V., Thomas, S. M., & Sharkey, K. M. (2015). Clinical practice guideline for the treatment of intrinsic circadian rhythm sleep-wakedisorders: advanced sleep-wake phase disorder (ASWPD), delayed sleep-wake phase disorder (DSWPD), non-24-hour sleep-wake rhythm disorder (N24SWD), and irregular sleep-wake rhythm disorder (ISWRD). An Update for 2015: An American Academy of Sleep Medicine clinical practice guideline. Journal of Clinical Sleep Medicine, 11(10), 1199-1236. https://doi.org/10.5664/jcsm.5100

Baglioni, C., Altena, E., Bjorvatn, B., Blom, K., Bothelius, K., Devoto, A., Espie, C. A., Frase, L., Gavrilotoff, D., Tuuliki, H., Hoflehner, A., Högl, B., Holzinger, B., Järnefelt, H., Jernelöv, S., Johann, A. F., Lombardo, C., Nissen, C., Peeters, G., ... Riemann, D. (2020). The European Academy for Cognitive Behavioural Therapy for Insomnia: An initiative of the European Insomnia Network to promote implementation and dissemination of treatment. Journal of Sleep Research, 29(2),e12967. https://doi.org/10.1111/jsr.12967
Bartlett, D. (2011). Cognitive behavioral therapy to increase adherence to continuous positive airway. In M. Perlis, M. Aloia & B. Kuhn (Eds.). Behavioral treatments for sleep disorders. A comprehensive primer of behavioral sleep medicine treatment protocols (pp. 211-222). Elsevier.

Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. Sleep Medicine, 2(4), 297-307. https://doi.org/10.1016/S1389-9457(00)00065-4

Bootzin, R. R. & Epstein, D. R. (2011). Understanding and treating insomnia. Annual Review of Clinical Psychology, 7, 435-458. https://doi.org/10.1146/annurev-clinpsy.012808.104155

Brasure, M., Fuchs, E., MacDonald, R., Nelson, V. A., Koffel, E., Olson, C. M Khawaja, I. S., Diem, S., Carlyle, M., Wilt, T. J., Ouellette, J., Butler, M., & Kane, R. L. (2016). Psychological and behavioral interventions for managing insomnia disorder: An evidence report for a clinical practice guideline by the American College of Physicians. Annals of Internal Medicine, 165(2),113-124. https://doi.org/10.7326/M15-1782

Broomfield, N., & Espie, C. (2005). Towards a valid, reliable measure of sleep effort. Journal of Sleep Research, 14(4), 401-407. https://doi.org/10.1111/j.1365-2869.2005.00481.x

Bukenhout, I., Allen Gomes, A., Pires, L., Russo, B., & Leitão, J. (2019). The Composite Scale of Morningness for chronotype estimation in Portuguese older adults – Psychometric properties and cut-off scores [Abstract]. Sleep Medicine, 64(Suppl. 1), S8-S9. https://doi.org/10.1016/j.sleep.2019.11.026

Buenaver, L. F., Townsend, D., & Ong, J. C. (2019). Delivering cognitive behavioral therapy for insomnia in the real world: Considerations and controversies. Sleep Medicine Clinics, 1(2), 275-282. https://doi.org/10.1016/j.jsmc.2019.01.008

Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Research, 28(2), 193-213. https://doi.org/10.1016/0165-1781(89)90047-4

Byars, K. (2011). Scheduled awakenings: A behavioral protocol for treating sleepwalking and sleep terrors in children. In M. Perlis, M. Aloia & B. Kuhn (Eds.). Behavioral treatments for sleep disorders. A comprehensive primer of behavioral sleep medicine treatment protocols (pp. 325-332). Elsevier.

Carney, C., Buysse, D., Ancoli-Israel, S., Edinger, J., Krystal, A., Lichstein, K., & Morin, C. (2012). The consensus sleep diary: Standardizing prospective sleep self-monitoring. Sleep, 35(2), 287-302. https://doi.org/10.5665/sleep.1642

Carskadon, M. A., & Dement, W.C. (2017). Normal human sleep: An overview. In M. Kryger, T. Roth & W. C. Dement (Eds.), Principles and practice of sleep medicine (6th ed., pp. 15-24). Elsevier.

Chung, F., Yegneswaran, B., Liao, P., Chung, S. A., Vairavanathan, S., Islam, S., Khajehdehi, A., & Shapiro, C. M. (2008). STOP questionnaire: A tool to screen patients for obstructive sleep apnea. Anesthesiology,108(5), 812-821. https://doi.org/10.1097/ALN.0b013e31816d83e4

Clemente, V. (2006). Como tratar os doentes com insónia crónica? O contributo da psicologia clínica [How to treat chronic insomnia patients? The contribution of clinical psychology]. Revista Portuguesa de Clínica Geral, 22, 635-644. http://dx.doi.org/10.32385/rpcmfg.v22i5.10290

Clemente, V. (2007). Insomnia Severity Index – ISI, European Portuguese Version. Coimbra University Hospital Centre, Sleep Medicine Centre, Coimbra, Portugal.

Clemente, V. (2013). Dysfunctional Beliefs and Attitudes About Sleep – DBAS-30, European Portuguese version. Coimbra University Hospital Centre, Sleep Medicine Centre, Portugal.

Clemente, V., Allen Gomes, A., Mendes, M. M., Marques, D. R., Russo, B., Serra, J., Moutinho dos Santos, J., & Moita., J. (2017). The European Portuguese version of the Insomnia Severity
Index (ISI): reliability, validity and diagnostic accuracy [Abstract]. *Sleep Medicine, 40*, e67. https://doi.org/10.1016/j.sleep.2017.11.191

Clemente, V., Marques, D. R., Miller-Mendes, M., Morin, C., Serra, J., & Allen Gomes, A. (2021). The European Portuguese version of the Insomnia Severity Index. *Journal of Sleep Research, 30*(1), e13198. https://doi.org/10.1111/jsr.13198

Cortese, S., Ivanenko, A., Ramtekkar, U. & Angriman, M. (2015). Sleep disorders in child and adolescents: A practical guide. In J. M. Rey (Ed.), *IACAPAP e-textbook of child and adolescent mental health.* (pp. 1-34). International Association for Child and Adolescent Psychiatry and Allied Professions. https://iacapap.org/content/uploads/1-4-SLEEP-2014.pdf

Drake, C. L., Wright, K. P. (2017). Shift work, shift-work disorder, and jet lag. In M. Kryger, T. Roth & W. C. Dement (Eds.), *Principles and practice of sleep medicine* (6th ed., pp. 714-725). Saunders Elsevier.

Edinger, J. D., & Carney, C. E. (2015). *Overcoming insomnia: A cognitive-behavioral therapy approach. Therapist guide* (2nd ed.). Oxford University Press.

Espie, C. A., & Kyle, S. D. (2012). Cognitive behavioural and psychological therapies for chronic insomnia. In T. J. Barkoukis, J. K. Matheson, R. Ferber & K. Doghramji (Eds), *Therapy in sleep medicine* (pp. 161-171). Elsevier Saunders.

Gomes, A. A. (2019). A course on behavioural sleep interventions and CBT for sleep disorders within a master degree programme: the first two academic years of experience with clinical psychology students [Abstract]. *Sleep Medicine, 64*(suppl.1), s10. https://doi.org/10.1016/j.sleep.2019.11.029

Gomes, A. A., Costa, V., Couto, D., Marques, D. R., Leitão, J. A., Tavares, J., Azevedo, M. H., & Silva, C. F. (2016). Reliability and validity of the Composite Scale on Morningness: European Portuguese version, in adolescents and young adults [O160]. *BMC Health Services Research, 16*(Suppl. 3), 82. https://doi.org/10.1186/s12913-016-1423-5

Gomes, A. A., Marques, D. R., Meiavia, A. M., Cunha, F., & Clemente, V. (2018). Psychometric properties and accuracy of the European Portuguese version of the Pittsburgh Sleep Quality Index in clinical and non-clinical samples. *Sleep and Biological Rhythms, 16*(4), 413-422. https://doi.org/10.1007/s41105-018-0171-9

Gomes, A. A., Marques, D. R., Mei-Via, A. M., Mei-Via, M., Tavares, J., Silva, C. F., & Azevedo, M. H. P. (2015). Basic Scale on Insomnia complaints and Quality of Sleep (BaSIQS): Reliability, validity, and normative scores in higher education students. *Chronobiology International, 32*(3), 428-440. https://doi.org/10.3109/07420528.2014.986681

Guimarães, C., Martins, M. V., Vaz Rodrigues, L., Teixeira, F., & Moutinho dos Santos, J. (2012). Epworth Sleepiness Scale in obstructive sleep apnea syndrome – an underestimated subjective scale. *Revista Portuguesa de Pneumologia, 18*(6), 267-271. https://doi.org/10.1016/j.rppnen.2012.06.005

Harvey, A. G., & Buysse, D. J. (2018). *Treating sleep problems: A transdiagnostic approach.* The Guilford Press.
Hauri, P. (n.d.). *The sleep disorders* (updated web edition). A Publication of the National Sleep Foundation reviewed by its appointed expert panel. National Sleep Foundation’s website. https://sleepdisorders.thensf.org/

Ivanenko, A., & Larson, K. (2013). Nighttime distractions: Fears, nightmares, and parasomnias. In A. R. Wolfson, & H. E. Montgomery-Downs (Eds.), *The Oxford handbook of infant, child, and adolescent sleep and behavior* (pp. 347-361). Oxford University Press.

Johns, M. W. (1991). A new method for measuring daytime sleepiness: The Epworth Sleepiness Scale. *Sleep*, 14(6), 540-545. https://doi.org/10.1093/sleep/14.6.540

Krakow, B. (2011). Image rehearsal therapy for adolescents. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatments for sleep disorders. A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 333-342). Elsevier.

Lask, B. (1988). Novel and non-toxic treatment for night terrors. *British Medical Journal*, 297(6648), 592. https://doi.org/10.1136/bmj.297.6648.592

Manber, R., & Carney, C. E. (2015). *Treatment plans and interventions for insomnia. A case formulation approach*. The Guilford Press.

Manber, R., & Simpson, N. (2016). Dissemination of CBT for insomnia. *Current Sleep Medicine Reports*, 2, 136-141. https://doi.org/10.1007/s40675-016-0048-x

Marques, D. R., & Gomes, A. A. (2012). *Diário de Sono Consensus de Carney et al., 2012, em português europeu. [Consensus Sleep Diary from Carney et al., 2012-European Portuguese language]*. Department of Education and Psychology, University of Aveiro, Portugal.

Marques, D. R., Gomes, A. C. A., Clemente, V., Moutinho dos Santos, J., Caetano, G., & Castelo-Branco, M. (2016). An overview regarding insomnia disorder: Conceptualization, assessment and treatment. In A. M. Columbus (Ed.), *Advances in Psychology Research* (Vol. 117, pp. 81-116). Nova Science Publishers.

Marques, D. R., Gomes, A. A., Clemente, V, Santos, J., & Castelo-Branco, M. (2015). Hyperarousal and failure to inhibit wakefulness in primary insomnia. *Sleep and Biological Rhythms*, 13(3), 219-228. https://doi.org/10.1111/sbr.12115

Meia-Via, M. S., Marques, D. R., Espie, C. A., da Silva, C. F., & Allen Gomes, A. (2016). Psychometric properties of Glasgow Sleep Effort Scale in Portuguese language. *Psychological Assessment*, 28(3), e12-e18. http://dx.doi.org/10.1037/pas0000178

Meltzer, L. J., Phillips, C., & Mindell, J. A. (2009). Clinical psychology training in sleep and sleep disorders. *Journal of Clinical Psychology*, 65(3), 305-318. https://doi.org/10.1002/jclp.20545

Miller-Mendes, M., Gomes, A. A., Marques, D. R., Clemente, V., & Azevedo, M. H. P. (2019). BaSIQS - basic scale on insomnia complaints and quality of sleep: reliability, norms, validity, and accuracy studies, based on clinical and community samples. *Chronobiology International*, 36(5), 644-656. https://doi.org/10.1080/07420528.2019.1578970

Moorcroft, W. H. (2013). *Understanding sleep and dreaming. (2nd ed.)*. Springer.

Morin, C. M. (1993). *Insomnia: Psychological assessment and management*. Guilford Press.

Morin, C. M. (1994). Dysfunctional beliefs and attitudes about sleep: Preliminary scale development and description. *The Behavior Therapist*, 17, 163-164.

Morin, C. M., & Espie, C. (2003). *Insomnia: A clinical guide for assessment and treatment*. Kluwer Academic Publishers.

Morin, C. M., & Espie, C. A. (Eds.) (2012). *The Oxford handbook of sleep and sleep disorders*. Oxford University Press.
Morin, C. M., Davidson, J. D., & Beaulieu-Bonneau, S. (2017). Cognitive behavior therapies for insomnia I: Approaches and efficacy. In M. Kryger, T. Roth & W. C. Dement (Eds.), Principles and practice of sleep medicine, (6th ed., pp. 804-813). Elsevier.

Pereira, H., Xará, D., Mendonça, J., Santos, A., & Abelha, F. J. (2013). Patients with a high risk for obstructive sleep apnea syndrome: Postoperative respiratory complications. Revista Portuguesa de Pneumologia, 19(4), 144-151. https://doi.org/10.1016/j.rppneu.2013.01.003

Perlis, M., Aloia, M., & Kuhn, B. (Eds.) (2011). Behavioral treatments for sleep disorders. A comprehensive primer of behavioural sleep medicine treatment protocols. Elsevier.

Perlis, M. L., Ellis, J. G., Kloss, J. D., & Riemann, D. W. (2017). Etiology and pathophysiology of insomnia. In M. Kryger, T. Roth & W. C. Dement (Eds.), Principles and practice of sleep medicine (6th ed., pp. 769-784). Elsevier.

Perlis, M. L., & Smith, M. T. (2008). How can we make CBT-I and other BSM services widely available? Journal of Clinical Sleep Medicine, 4(1), 11-13. https://doi.org/10.5664/jcsm.27071

Qaseem, A., Kansagara, D., Forciea, M. A., Cooke, M., & Denberg, T., for the Clinical Guidelines Committee of the American College of Physicians (2016). Management of chronic insomnia disorder in adults: A clinical practice guideline from the American College of Physicians. Annals of Internal Medicine, 165(2), 125-133. https://doi.org/10.7326/M15-2175

Reis, R., Teixeira, F., Martins, V., Sousa, L., Batata, L., Santos, C., Moutinho, J. (2015). Validation of a Portuguese version of the STOP-Bang questionnaire as a screening tool for obstructive sleep apnea: Analysis in a sleep clinic. Revista Portuguesa de Pneumologia, 21(2), 61-68. https://doi.org/10.1016/j.rppnen.2014.04.009

Riemann, D., Baglioni, C., Bassetti, C., Bjorvatn, B., DolencGroselj, L., Ellis, J. G., Espie, C. A., Garcia-Borreguero, D., Gjerstad, M., Gonçalves, M., Hertenstein, E., Jansson-Fröjmark, M., Jennum, P. J., Leger, D., Nissen, C., Parrino, L., Paunio, T., Pevernage, D., Verbraecken, J., ... Spiegelhalder, K. (2017). European guideline for the diagnosis and treatment of insomnia. Journal of Sleep Research, 26(6), 675-700. https://doi.org/10.1111/jsr.12594

Roane, J., & Taylor, D. (2013). Pediatric insomnia. In A. R. Wolfson & H. E. Montegomery-Dowds (Eds.), The Oxford handbook of infant, child, and adolescent sleep and behaviour (pp. 305-326). Oxford University Press.

Rogers, A. E. (2011). Scheduled sleep periods as an adjuvant treatment for narcolepsy. In M. Perlis, M. Aloia & B. Kuhn (Eds.), Behavioral treatments for sleep disorders. A comprehensive primer of behavioral sleep medicine treatment protocols (pp. 237-239). Elsevier.

Santos, C. R. (2001). Avaliação da sonolência diurna excessiva: Adaptação cultural e linguística da Escala de Sonolência de Epworth para a população portuguesa [Assessing excessive daytime sleepiness: Cultural and linguistic adaptation of the Epworth Sleepiness Scale for the Portuguese Population]. Monografia de licenciatura em neurofisiologia. [Unpublished academic dissertation]. Higher School of Technology of Porto.

Sargento, P., Perea, V., Ladera, V., Lopes, P., & Oliveira, J. (2015). The Epworth Sleepiness Scale in Portuguese adults: From classical measurement theory to Rasch model analysis. Sleep and Breathing, 19, 693-701. https://doi.org/10.1007/s11325-014-1078-6.

Schutte-Rodin, S., Broch, L., Buysse, D., Dorsey, C., & Sateia, M. (2008). Clinical guideline for the evaluation and management of chronic insomnia in adults. Journal of Clinical Sleep Medicine, 4(5), 487-504.
Silva, A. M., Alves, J., Gomes, A. A., Marques, D. R., Azevedo, M. H., & Silva, C. (2016). Psychometric properties of the BaSIQS-Basic Scale on insomnia symptoms and quality of sleep, in adults and in the elderly [Abstract]. *BMC Health Services Research, 16*(Suppl 3), 84-85. https://doi.org/10.1186/s12913-016-1423-5

Silva, C. F., Azevedo, M. H. P., & Dias, M. R. V. C. (1995). Estudo padronizado do trabalho por turnos – versão portuguesa do SSI [Standard Shift Work Index – Portuguese version of the SSI]. *Psychologica, 13*, 27-36.

Smith, C. S., Reilly, C., & Midkiff, K. (1989). Evaluation of three circadian rhythm questionnaires with suggestions for an improved measure of Morningness. *Journal of Applied Psychology, 74*(5), 728-738. https://doi.org/10.1037/0021-9010.74.5.728

Van Straten, A., van der Zweerde, T., Kleiboer, A., Cuijpers, P., Morin, C. M., & Lancee, J. (2018). Cognitive and behavioral therapies in the treatment of insomnia: A meta-analysis. *Sleep Medicine Reviews, 38*, 3-16. http://dx.doi.org/10.1016/j.smrv.2017.02.001

Warzak, W. J., & Friman, P. C. (2011). Moisture alarm therapy for primary nocturnal enuresis. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatments for sleep disorders. A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 343-350). Elsevier.

Zucconi, M., & Ferri, R. (2014). Classification of sleep disorders. In C. Bassetti, Z. Dogase, P. Peigneux. (Eds.), *Sleep medicine textbook* (pp. 95-109). European Sleep Research Society (ESRS).

Zweerde, T. V., Bisdounis, L., Kyle, S. D., Lancee, J., & Van Straten, A. (2019). Cognitive behavioral therapy for insomnia: A meta-analysis of long-term effects in controlled studies. *Sleep Medicine Reviews, 48*, 101208. https://doi.org/10.1016/j.smrv.2019.08.002
